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## EDITORIAL BOARD

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## EDITOR'S NOTE

Welcome to the second issue of JIRSEA 2011.

In this issue we are presenting to you five articles that I am sure you will find to be interesting, informative and catalysts for further significant research and investigations into IR around the world. It also presents a *Comment* column to provoke thoughts on whether higher education as we know it and as an institution will continue.

As I mentioned in the previous issue of JIRSEA, SEAAIR runs an annual conference which is hosted by different universities in the region and therefore held in various places in the countries within the region. In addition to this Journal, the SEAAIR annual conferences provide further opportunities to discuss IR with colleagues and peers from around the world. You may find further information on SEAAIR website <http://www.seairweb.info>

As most if not all of us know, Mathematics and English are two subjects of intense discussion in many higher education institutions in Southeast Asia in particular and around the world generally. Is this an indictment of Maths and English language teachers or even an indictment of the training of these teachers? The first paper in this issue talks about aspects related to this through analyzing blogs that Maths teachers were involved in. Certain characteristics of these teachers may be discerned that may lead to further understanding of the requirements of training Maths and English language teachers.

Whether university and college lecturers in Southeast Asia realize or not, an increasingly inevitable situation is fast developing around them. *Traditional* way of teaching which sums to rote teaching and learning, must give way to student-centered teaching. Saed Sabah et al reported in their paper that currently the opportunities for empowerment are not as yet available to students generally. They used *inquiry-based* teaching in laboratory instructions of science as the subject. They concluded that lecturers/teachers will need continual re-training especially in understanding the right pedagogy to use to meet the various requirements brought about by changing technology and changing student generations' characteristics.

Juxtaposed on the above continual training of lecturers/teachers is also the need to ensure the quality of the students entering the higher education system. Mahasneh and Al-Alwan in their paper in this edition of JIRSEA reported on a study where they looked firstly at whether students have any goals at all and then sought any correlations between having these and the self-motivation that is so necessary in university studies.

Jawarneh et al reported on a study they carried out to find out whether Social Studies curriculum and/or textbooks on these subjects contain any *education general principles*

which are considered able to help students develop a number of soft-skills required for employment.

Kasawneh et al conclude this edition of JIRSEA with a report on their studies about lifelong learning and the impacts on continual employment of graduates.

Just to complete the cycle of discussions, I have included in this edition a *Comment* column which we publish from time to time written either by myself as Editor or an invited person depending on the expertise required.

All in all I hope that we have brought you this time a collection of relevant articles and reports on studies in areas of aspects of institutional research from developing countries the discussions and results of which may be of some help to other higher education institutions in other developing countries.

Pleasant reading to you and we continue to extend our invitation to authors to submit papers to JIRSEA. Please note that all papers are subject to double blind reviews. So while the process certainly takes a much shorter time than printed publications, it nevertheless takes time. This practice ensures that JIRSEA continues to be a journal of choice in the area of institutional research and its indexing with SCOPUS, DOAJ, Elsevier and others is maintained.

Thank you again to those who have contributed this time around.

*Nirwan Idrus*

Editor

# **Blogging to build a community of practice (CoP): Malaysian Mathematic teachers' involvement and participation in online teacher professional development**

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## **Abstract**

This paper investigates the blogging experiences of maths teachers from five Smart schools in the Klang Valley, Selangor State, Malaysia. Transcripts of the blogs which the teachers participated in for three months were analyzed together with focus group interviews that investigated the teachers' perceptions of their involvement in the blogs. These were analyzed using the reflections from the mentor of the blog. The analysis revealed that teachers were more inclined to post entries rather than comment on each others' entries and were basically performing what was required of them so the real discussion was at a basic level. They claimed that they did find the idea of using blogs enjoyable as they were able to pick up ideas that could help improve their classroom practices. However they maintained it was necessary to have very committed members so as to have active discussions and better participation in the blogs to encourage better interaction.

**Keywords** Blogs, Community of Practice, Teacher Professional Development, Online Participation

## Introduction

Technology has helped propel the teaching and learning process to new levels with innovative tools and practices (Zhu 2006, Paloff & Pratt 2005, Williams & Jacobs 2004). The Internet with its multitude facets is one such innovation that has enabled educators to enhance the teaching and learning process. Blogs, wikis, social networking sites are but examples of the many facets on the World Wide Web that are available for use. Much has been done to examine how these facets have benefitted learning and learners in particular, whilst the impact on the teachers themselves in the sharing of pedagogic practices has been largely unexplored. Kaminski (2005) posits it is important for teachers to be aware and knowledgeable about using technology innovation in their classrooms and many are already successfully exploiting it. In addition, teacher professional development has also benefited from these online learning platforms and it is revealed that teachers are more innovative in their pedagogical practices (Dede, Jass Ketelhut, Whitehouse, Briet & McCloskey 2006) and also in their use of technology (Renninger & Shumar 2004).

One such e-learning platform that is widely utilized today is weblogs or blogs which is seen as transformational technology for teaching and learning (William and Jacobs 2004, Kennedy 2002). The blogosphere – the public space used for communication and individual free speech (Tremayne 2006, Barlow 2007) is a versatile social environment that can result in different levels and layers of learning. These blogs are easy to use and allow users to create information instead of merely consuming information as was done traditionally (Baggetun & Watson 2006). The most interesting feature of the blog is its interactivity which enables users to post entries and others to provide feedback on the entries. Once again the blog has been exploited by teachers who encourage learners to create blogs and postings but teachers themselves have not used blogs to develop professionally.

In the field of education blogs have been used to enhance the learning process and there has been growing interest in its application as an educational resource (Goodwin-Jones, 2003, Burgess 2006, Richardson 2006). Farmer, Yue and Brooks (2008 p. 124) proclaim it as “an effective tool for user centered, participatory learning” and quote Burgess (2006 p. 105) idea that users are seen as “critical, collaborative, and creative participants in the social construction of knowledge.” The use of blogs to enhance learning also suggests teachers can find them useful in enhancing their pedagogical techniques. Williams and Jacobs (2004), Stiler & Phillip (2003), Wagner (2003) observe that educational applications of blogs are commonly found in the field of teacher training with the use of online reflective journals as learning tools.

This paper explores the use of blogs as learning spaces for online teacher professional development. Instead of viewing teacher training as top-down, this paper pushes the boundaries of teacher training to include online peer training and collaboration.

## **Online Teacher Professional Development**

Teacher professional development (TPD) necessitates ongoing support and continuous interaction among teachers, both of which are difficult to sustain when face to face interaction ceases, as is often the case after a traditionally practiced two-week long teacher development program which is the common form of training. Sawyer (2007) tells us that teacher development needs to be viewed as a shift from external expertise to personal empowerment in collaborative practice. For teachers to be empowered, their knowledge, attitudes and behaviors need to be examined and this constitutes a transformation by changing mindsets, reexamining beliefs and habits. Hence, it is difficult to bring about needed change within a span of two weeks and what is crucial is the long term support which will ensure teachers are being informed of new developments in pedagogy.

Considering the rapidly changing trends in the field of education, it is imperative that teachers keep abreast of new developments and an efficient and effective way of doing this is with online teacher development (Dede, Jass Ketelhut, Whitehouse, Breit & McCloskey 2006). It is clear that online TPD can help widen content knowledge and provide new trends in pedagogical practices and an enlightened teacher can help students learn better (Job-Sluder & Barab 2004). This online environment can lead to the development of a learning community among teachers i.e. a community of practice (CoP). Research has shown how online communities act as collaborative encounters which lead to shared creation and understanding of individual and collective learning (Yeh 2010)

Hence blogs are useful tools as they can create a non-threatening platform for teachers to share their expertise and experiences with other teachers asynchronously. There is no restriction on location or time zone as communication can be from any place and at any time as long as there is access to the internet. This will give teachers a sense of having a common objective and a shared vision to examine other alternatives and ways of teaching (Robertson 2007, Darling Hammond 1997). When teachers communicate effectively there is collaborative knowledge building (Albion 2003) which further enhances the quality of teaching and promotes professional engagement with learning. It is also important that teachers critically reflect upon their teaching experiences and blogs can be a platform for teachers to engage in reflective practices. It is only when teachers have time to think, reflect and respond to views and comments will they be able to participate effectively in enhancing their teaching and learning. This may not always be possible during short term teacher development sessions.

## **Involvement in Online CoP**

Communities of Practice (CoPs) are usually assigned specific characteristics like being a collaborative venture, having synergy, being a source of informal support, allow for reach, reciprocity and interactivity, and enhance participation and learning (Brown & Duguid 1991). Jones and Preece (2006) view CoPs as being of two types – communities of interest and communities of practice. The former involves a group of people sharing similar interests coming together to network socially whereas the latter involves groups of practitioners sharing knowledge, beliefs and values (Lave & Wenger 1991). This CoP



developed in this study focused on the second type – a community of teachers collaborating and interacting to enhance their professional development.

CoP promotes interaction that is synergistic as it allows for continuous and dynamic communication leading to the development of better ideas, suggestions, solutions and even output. Such interaction helps create an environment that is informal bringing members of the community closer together. Blogs are useful spaces for setting up online communities of practice as they have similar characteristics to communities of practice and are platforms for communication. Research does however caution on being overly dependent on blogs being utilized effectively. As Ling et.al (2005) pointed out many members in online communities prefer to be silent participants, reading rather than sharing and responding. According to Baek (2002) not having enough time, not reflecting on practices, not being tech savvy and a general sense of distrust of sharing are some of the reasons why teachers do not belong to online communities. In order for online communities to foster a sense of belonging among its members (Ellis, Oldridge, Vasconcelos 2004), there is a need for greater involvement from them. In addition there must be a sense of ownership among members and members must feel they are gaining from the experiences shared online (Robertson 2007).

## **Social Constructivism**

This sharing and construction of knowledge in a collaborative learning environment is the core of social constructivist theory. Social constructivism emphasizes the development of meanings and understandings from social encounters. Vygotsky (1986, 1987) proposes that dialogic interactions enable meaningful negotiations in contextualized situations and this is knowledge construction. Social constructivism includes participating with others in meaningful activity which involves higher mental functions. This theory of learning proposes that knowledge is ‘socially constructed through collaborative efforts towards shared objectives, or by dialogues and challenges brought about by the interaction of different perspectives’ (Hull & Saxon 2009: 626). Jones & Preece (2006) also suggest that setting up communities of practice online will enable meaningful, situated negotiations that result in knowledge construction. These communities of practice will promote social encounters which lead to new meanings and understandings and this is in line with social constructivism as proposed by Vygotsky.

This study is premised on the theory that teachers’ personal worlds (reflective and meaning focused), as well as the shared world (collaborative and knowledge focused), if associated with a purposeful and structured educational environment, could provide a worthwhile learning experience (Garrison et al., 2000) for their professional development. The idea of building online community through blogging is based on the constructivist theory of learning, which emphasizes a social or situated process of learning and personal construction of knowledge, including “modeling, coaching, scaffolding, articulation, reflection, and exploration” (Loving et al., 2007). According to Oravec (2003), blogging can be usefully exploited to build a “community diary” around a large project in which a group of learners can establish and maintain thoughts and share their insights. Thus, utilizing the blog as a “community diary” (Oravec, 2003), and driven by a common interest amongst the participant teachers to share and exchange

information, it is hoped that a "spiral of knowledge" in which individuals' knowledge transforms and builds upon others knowledge to form social and organizational level knowledge (Nonaka 1994) will be formed.

## **Objective of Study**

This study set out to investigate teachers' perceptions and challenges of their involvement in blogs by focusing on their participation and the quality of the blog entry posts. Specifically, five Maths teachers from five Smart Schools in the Klang Valley were given the opportunity to use a blog as learning space to share pedagogical practices and difficulties. The research questions that frame the study are,

- How involved are the teachers in relation to their participation in the blogs and the quality of the blog content?
- What are the benefits and problems of being involved in the blogs according to the teachers?

## **Method**

### ***Participants***

The participants in this study were five Maths teachers from 5 Smart Schools in the Klang Valley. They were all graduate teachers whose teaching experiences ranged from 10 years to only 6 months. They did not know each other also until they were introduced to each other online.

### ***Instruments***

The instrument employed for the study was a Google blog site wherein the teachers were given two tasks – a successful and an unsuccessful one as perceived by them (see below) to complete online. Over a period of three months the teachers were encouraged to go online whenever they were free to post their entries and to also respond to each others' entries. The first entry by the researchers informing the participants of the two tasks is illustrated below.

### **Online discussion**

Dear everyone,

Thank you for participating in this Online Continuing Professional Development project.

We appreciate your participation and commitment. We assure you that this blog is private; therefore nobody from 'outside' the group will be allowed to view the entries in this site. So, please do not hesitate to share your views here. Now, please look at the

questions below and answer them as best as you can.

### **Task 1**

1. Describe one of your lessons that went very well. For this lesson, explain what you were teaching, how you were teaching and how you knew it went well. In your description of your lesson consider the following:

- a. Where did your ideas for this lesson come from?
- b. How was this different from other lessons?
- c. What do you think made the lesson successful?
- d. Did you learn anything from the experience?
- e. If you want to improve this lesson how would you do it?
- f. Have you shared your experience with anyone else?

### **Task 2**

All teachers experience challenges. Could you describe one that was very challenging.

Where did your ideas for this lesson come from?

- a. Where did your ideas for this lesson come from?
- b. How was this different from other lessons?
- c. What do you think made the lesson challenging?
- d. Did you learn anything from the experience?
- e. If you want to improve this lesson how would you do it?
- f. Have you shared your experience with anyone else?

Now read the other entries posted by your online community and discuss them. You might consider what you have learnt from reading each others' entries.

In addition, the teachers participated in two focus group interviews where they were asked to comment on their involvement in the blog activity and their perception of the usefulness of the activity. The mentor who was assigned to the group also recorded a post reflection on the blogging activity wherein perceptions of the activity, teachers' level of involvement and perceptions of the usefulness of the blogs were noted.

## **Procedure**

The first and most important thing to do was to identify the teachers who would participate in the project. Mathematics teachers from five secondary schools were invited to participate in the project. The invitation was sent out to the principals of the selected schools and followed up with two visits by members of the research team in early August. The first visit was to brief the school principal on the project and its requirements in terms of number of teachers, demands on teachers and gains to them and the school generally while the second visit was to brief the identified teachers and inform them on the nature of their involvement in the project.

The next stage- the face to face interaction- involved getting teachers to meet and get to know each other. To this end, two ice breaking sessions were held in September to introduce the teachers to the project team members and to each other. These sessions were held to brief the participants about the aims and objectives of the project. The teachers were also briefed about the training sessions that would be held and tentative dates worked out with them.

To guide the participants through the blogging activity a face to face workshop was conducted in November where they were provided hands on training and practiced blogging. This session proved very useful as it was possible to identify the initial apprehensions the teachers had with going online. It was also during this session that a time frame of about three months (November 2009 till February 2010) was agreed upon by all for the blogging activity. After this period of three months the participants came together for two focus group interviews to discuss their participation in the blog postings and to deal with related problems.

## **Data Analysis**

The blog documents were printed and analyzed for level of participation and quality of discussion to see how helpful the blogs were to teachers. The entries were then tabulated for each participant according to frequency of blogging and comments or responses. The blog was also analyzed qualitatively to see what issues were being discussed. The entries were read a number of times to identify what the teachers were concerned with.

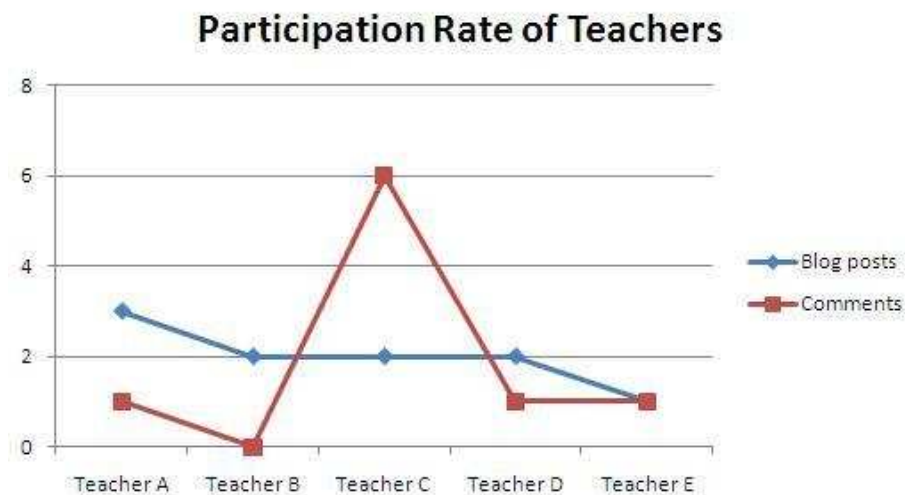
The interviews were audio-recorded and transcribed, and then the transcripts read a few times to identify the extent of teachers' involvement, the extent to which the blog activity helped them to develop professionally and their perceptions of the advantages and disadvantages of their involvement in this activity. The transcripts were analyzed for themes relating to how beneficial the teachers found the blogging activity and the problems they encountered. The blogs were analyzed together with the focus group interviews and the mentor's written reflections of the blog activity.

## Results

### *Participation Rate of Teachers in Blogs*

It was found that the teachers varied in their level of participation in the blogs with some being more concerned with fulfilling the task set them and others just doing the minimum required. Figure 1 illustrates the participation level of the teachers by comparing the number of blog posts and their comments. Teacher A, it can be seen blogged a total of three times to become the most frequent blogger where posting entries was concerned. Teachers B, C and D each posted only two entries and Teacher E only one. Where commenting on each others' posts was concerned, Teacher C recorded the most number of comments with six entries. Teachers A, D and E only posted one comment each while Teacher B did not comment on any of the blog posts at all. Teacher B claimed that she teaches Additional Mathematics whereas the other teachers taught Modern Mathematics so she did not feel she could comment on their postings. Overall, as the line graph indicates, the teachers' participation in the blogs was very low considering this activity was for a period of three months.

It would appear that the teachers did not have a sense of belonging and were largely unfamiliar with the members of the blog so they were careful with what they posted on the blog. This is very in keeping with the Malaysian culture of 'saving face' wherein there is no open confrontation or disagreement and people do not really say what they mean. What was apparent was the teachers did not feel they were gaining from the discussions as exemplified by Teacher B's remark above. Without the sense of belonging (Ellis et al 2004) and ownership (Robertson 2007) so necessary for blogs to be successful it was difficult to bring about much change with the teachers even after a period of three months.



***Fig 1 – Participation Rate of Teachers***

### *Quality of Discussion*

The analysis of the quality of the blogs revealed that the teachers were concerned with pedagogical approaches – the how to teach issue. It would appear that the teachers were happy to receive new ideas that they could implement in their classrooms and did not feel the need to comment on them. This lack of reflection on ideas and techniques presented throughout the period of blogging reinforces Ling et.al (2005) view that online participants prefer to remain silent participants who read rather than share and respond. Thus, no real in-depth level of information processing and knowledge construction occurred and discussion was only at a very basic level.

While each teacher did complete the tasks set there was no attempt to develop the entries by the other teachers. For instance, when Teacher C suggested teaching Linear Equations with an idea she sourced from an ex student in USA, none of the teachers commented on it. Instead the mentor provided two very encouraging responses in the blog. When Teacher A uploaded slides prepared by teachers in his school on how to teach two dimensional loci once again the others did not comment on the slides. It was the mentor who complimented him on his creativity in designing software to assist in teaching. This was the general trend throughout the 4 months with the teachers simply performing only what was required of them.

Teacher C who posted the most number of comments as revealed above (Figure 1) was very willing to share and respond in the blog. For instance, when Teacher B asked for help in teaching weaker students in a more effective way she responded by saying although she herself did not have any idea she would ask teachers in her school for ideas and get back to her.

Teacher C said...

Hi,  
Sorry, I have no idea coz I'm teaching lower form..and not maths background teacher..But maybe I will ask my senior teacher. If she has a good idea I will tell u.Ok.

When she did have a comment to share she was very helpful and provided useful tips for the rest of the teachers as evidenced from her blog entries below.

Usually the problems in circle topic are because the students don't know which formula that they suppose to use and they need to derive the formula to find the answer. I think with a lot of easy revision exercises it will help them.

In my opinion, courses that I have been attended so far, especially the ones that related to Maths teaching are very good and really help me to improve my skill. Especially marking scheme course for PMR. so I know what are important things and how to answer questions correctly.

### ***Benefits of the blogging activity***

The teachers generally agreed that the sharing of ideas in the blog was beneficial to them and they agreed that they had picked up ideas that would help improve their teaching practices. Teacher A states,

“hmm .. since I have just started teaching form three classes this year, and there are topics which have been left since years .. so what they shared was good .. we can use it in our teaching..”

The teachers enjoyed the blogs as they managed to learn, new and creative techniques of teaching problematic areas in mathematics. In addition, these teachers claimed they did pass on the new techniques to colleagues in their schools who were also having similar problems. This sharing is encouraging as it is in line with the concept of the collaboration essential to create a functioning CoP (Albion 2003, Yeh 2010).

Another development from the blogs was the more junior teachers seeking assistance from the more experienced teachers with regard to issues raised in the blogs. To quote a teacher who was having problems getting her weak students to differentiate intersection from union,

“A senior colleague told me instead of using the shading method to mark the area of intersection or union, she suggested using the 'tick' method which I believe is less messy and clearer.”

What is interesting here is that although she did post a query on the blog she still went outside the group to seek help for her problem. This moving outside the blog group to seek assistance is similar to the idea that a CoP has reach in that it extends to include other interested individuals also (Brown & Duguid 1991).

### ***Problems related to the blogging activity***

While the teachers did find the blogging session was beneficial they highlighted some of the problems which they claimed led to the poor discussions. These weaknesses, we believe resulted in a low level of commitment, as is evident in the poor participation rates (Figure 1) and the superficial nature of most of the entries. The generally poor participation discouraged active participation even among those who genuinely wanted to be more active. As Teacher C puts it,

“If everybody was active (giving response) then I would be active too .. like that day, it was just Teacher B .. then there were only two teachers .. so I was like .. nobody has done it .. so I didn't do it”.

Teacher C was the most active member of the blog and was the one who posted the most number of comments to other entries. If others had followed her then the community would be buzzing with activity. Hence, if the teachers had participated more actively and been more involved in the discussion and on a regular basis the level of interaction would be better and the commitment stronger. However that was not the case in this blog. No new responses left the reader frustrated and therefore no additional comments were given in return. To quote Teacher C

“ ...that’s why, sometimes I went in but there were no response from others so I didn’t add anything..”

When there is no social construction of knowledge through collaboration as is evident with this group of teachers then naturally there is poor participation and entries are usually at a superficial level. That is why it is so important for blog members to be involved and share their insights by posting comments on the blog. As Nonaka (1994) posits transforming and building upon others reflections will help create a “spiral of knowledge”

This low level of interaction resulting from the limited and shallow discussions made the blog seem less attractive to the teachers. They claimed the blog was ‘not attractive enough’ and ‘not interesting enough’ for them to keep visiting the site as Teacher A mentioned,

“there is something missing .. the blog was not active enough .. not like other blogs ..”

What was interesting here is that the teachers were not empowered (Sawyer 2007) to recongise they needed to make the blog attractive and interesting. It could be because they were new to the idea of blogging for professional development and were waiting for the mentor to create an active and vibrant online community.

The teachers expressed disappointment that they were not notified via emails when blog entries were made as this meant they had to check the blogs regularly to see if there were any new entries and this to them was a waste of time. Teacher A complained,

“Bloggers are different... if someone puts in an entry there is no message like email or facebook...”

## Discussion

The idea behind the blogging session was not only for teachers to share their effective practices with others but also for them to seek new ideas and techniques from others, who are perhaps more experienced than them. Ideally, we expected there would be questions and answers, or suggestions and comments in the blogs. Less experienced teachers might want to ask for advice where else more experienced ones might want to share their valuable experiences. However, this did not sufficiently happen in the blog sessions. Ling et al (2005) state it is usually 4 – 10% of members in online communities who produce more than 50-80% of messages and ideas shared whereas others are inactive. One of the teachers complained that besides late responses to entries, no one gave ideas or solutions to questions posed.

“no responses .. too slow .. and most of them asked more questions (rather than giving answers)”

The selection of teachers and the levels they teach is a crucial issue to take into consideration. Teachers claimed that, for the discussion to flourish, it needs the assembly of teachers who are teaching the same level as they would have more things in common to share. The evidence could be seen in the teachers’ comments below,



“One more thing .. we are teaching different forms, like me, I am teaching Form Two and Three, so I just have the knowledge for that certain forms. If we were teaching the same levels, it would be more meaningful... so I didn't have anything to say .. I just didn't know how to put comments ..”).

“.. So I feel that in this group we have teachers from various level, various forms,... Although we belong to the Maths panel, for myself I am more to Add Maths. But when I saw, you know the Locus and all that; I am not teaching that... in fact I have forgotten it! So I like want to sit down and recall back how to ..... and to suggest something I think it will take some time.”

In addition to selecting those teachers who are dealing with the same level, putting one or two “expert teachers” would be beneficial as well. A teacher who has only six years of experience might want to consult more experienced teachers, for instance. As one teacher suggested,

Why don't we ask an “Expert Teacher”(to be in this group) because I think that will help more .. like myself, I am new and I have a basic in Science and just ventured into Maths field so everyone can learn and ask from senior teachers”.

This does make sense, because development is about improving oneself to become better. And to develop, they need to be exposed to new and better examples, and these examples could be derived from the experiences of others.

### **Conclusion**

This study has shown that using blogs to set up a community of practice comprising teachers seeking professional development does have its merits in spite of the many weaknesses mentioned. After a three month blogging stint the Maths teachers in this study claimed they would be interested in continuing their involvement in the blogs and were keen to set up school communities comprising all the Maths teachers in their individual schools. Their personal experiences in this blog and the relationships they fostered with the members of the blog are signs that they do see the value of sharing ideas and practices online. And according to Jung and Brusck (2009) teacher involvement in online communities depends on individual goals, personal experiences and characteristics, relationships with other members and school culture.

What needs to be improved is the reflective discourse that will enable the teachers to think critically and creatively to arrive at suggestions on how to improve their pedagogic practices (Dede, Jass Ketelhut, Whitehouse, Briet & McCloskey 2006). Blogs function effectively as reflective journals that enable teachers to think about their classrooms in different ways. The more they think about their classrooms the more empowered they are as agents of change in moving their traditional classrooms to transformative spaces. This

is the empowerment that needs to be cultivated in teacher professional development programs.

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# Goal Orientation of university students and its relationship to Self-Efficacy and Intrinsic Motivation

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## Abstract

This study aimed at identifying the goal orientation of students at the faculty of Educational Sciences in Al-Hussein Bin Talal University, and its relationship to their self-efficacy and intrinsic motivation. A random sample of 460 male and female students at the faculty of educational sciences was chosen. Three questionnaires on Goal orientation, Intrinsic motivation and Self-efficacy were administered to members of the sample during academic year 2010 / 2011.

Results indicated that 72% of the students had a learning goal, 15.2% had a performance goal orientation, and 23.9% had a performance – avoidance goal orientation. In addition, results indicated that there is a relationship among learning goal, self – efficacy and intrinsic motivation. Also, results indicated that there is relationship among performance goal, self – efficacy, and intrinsic motivation.

**Keywords:** goal orientation, self – efficacy, intrinsic motivation.

## Introduction

In recent years, goal orientation has become a popular construct of interest among social, developmental, and educational psychology researchers. So, the type of academic goals pursued by students is one of the most important variables in motivational research in educational contexts.

Goal orientation emphasizes the purpose for which an individual participates in an activity or engages in a task ( Rivers, 2008 ). According to goal orientation, students hold Personal goal orientation that serves as reasons for engaging in or avoiding achievement – related behaviors. Students who are focused on demonstrating their ability to others and define their competence in relation to others are thought to be holding a performance-approach goal orientation, whereas those who primarily want to avoid looking incomplete are considered to be holding a performance-avoidance goal orientation. Conversely, students with a learning goal orientation are focused on learning and improvement and define their competence in relation to their own past performance (Beghetto, 2007).

Goal orientation is generally regarded as integrated patterns of motivational beliefs that represent different ways of approaching, engaging in, and responding to achievement – related activities (Pintrich, 2000). On the other hand, teachers' knowledge about students' goal orientation play an important role in how they organize and enact their classroom instruction (Borko&Putnam, 1996; Calderhead, 1996). Researchers have theorized that individuals focusing on a learning goal strive to master the task, seek out challenging tasks, and view failure and success feedback as a source of information to use in improving future performance (Diener & Dweck, 1978). Additionally, individuals focusing on a performance goal strive to demonstrate their abilities to perform tasks well related to others, seek positive judgments from other individuals, and perceive effective performance as an indication of high ability. Finally, individuals focus on avoidance – performance goal orientation as individuals' desire to avoid unfavorable Judgments from others.

The above introduction shows that goal orientation plays a crucial role in students' motivation and success. According to goal orientations theory, students might have different goals when engaging in achievement tasks. In addition, goal orientation may be related to a variety of factors, such as; intrinsic motivation and self-efficacy.

## Statement of the Problem

In the field of social cognitive psychology, students' goals are strong predictors of their motivation and academic achievement (Ames, 1992; Pintrich & Schunk, 2002). Students enter learning situations with different goals, which lead them to different response patterns in competence-related activities (Dweck & Leggett, 1988). So, Educators have recognized the need to understand the factors that contribute toward students' success in the classroom, and to find ways to motive students to succeed. Of particular interest is the relationship between student's goal orientations, academic self – efficacy, and motivation to learn in light of lack of attention given to the study of these variables in general, and

mainly in Arab countries. Therefore, the problem of this study is to examine the patterns of Goal Orientation Among students of Faculty of Educational sciences in Al- Hussein Bin Talal University and its relationship to self – efficacy and intrinsic motivation.

### **Study Purpose and Questions:**

The motivation for this study was grounded in a desire to expand the understanding of possible Psychological Predictive measures of students' success. More specifically, the aims of the study will be two–fold:

- 1 to explore whether students can be classified in groups according to their goal orientations (Learning, Performance or Avoidance)
- 2 to test the relationship among goal orientations, self-efficacy and intrinsic motivation for a sample of (AHU) students

The specific study questions that guided this study were:

- 1 what different goal orientations do students have?
- 2 are the relationships among goal orientation, academic self-efficacy and intrinsic motivation

### **Significance of Study:**

The present study represents the first explicit examination of the patterns of goal orientation, and the relationships among goal orientation, intrinsic motivation, and self – efficacy in the Arab countries - according the researchers knowledge. Therefore, this study may be closed the lack in this field.

In addition, this study is very important for many reasons:

1. Benefit teachers in helping them to understand the importance of motivation, goal orientation, and self – efficacy as these factors relate to engaging students in academic tasks.
2. It opens the door for researchers to conduct related studies in the field of goal orientation and its relationship to other variable in different universities

### **Definition of terms**

*Goal orientation*: the reasons and purposes that lead students to engage in the learning tasks with goal-directed and cognition–based behaviors. It includes learning goal orientation, performance goal orientation, and performance-avoidance goal orientation. Goal orientation will be measured by using Midgely's patterns of adapted learning survey (Midgley, et al., 1996).

*Intrinsic motivation*: It can be defined as doing an activity for itself and for the pleasure. As such, an individual's internal desire to attain success as measured by Harter's intrinsic orientation scale (Harter, 1981).

*Self-efficacy*: The student's beliefs about their ability to do a particular task as measured by self – efficacy scale (Sherer, Maddux, Mercandante, Prentice–Dunn, Jacobs & Rogers, 1982)

## Literature Review

For the past two decades, goal orientation has been one of the primary constructs used in the study of achievement motivation. An individual's goal orientation represent one's purpose for engaging in achievement-related behaviors, as well as one's orientation towards evaluating his or her competence in the achievement activity. For instance, individuals who preference goals that involve learning new skills and mastering unfamiliar situations would be labeled as having a learning goal orientation (Gerhardt&Brown,2006). Alternatively, individuals who pursue achievement –related behavior for the purpose of demonstrating their skills and who evaluate their competence in relation to others would be labeled as having a performance goal orientation (Pastor, Barron, Miller&Davis,2007). Similarly, individuals with a performance –avoidance goal orientation concerned about their performance in relation to their peers (Pastor, Barron, Miller & Davis , 2007).The performance approach orientation student, however ,is focused on performing better than other students, whereas the performance –avoidance student is focused on not performing worse than other students.

Intrinsic motivation (IM) has been one of the concepts studied in motivational research in teaching. According to Deci and Ryan(1990), intrinsically motivated behaviors are engaged in for their own sake, for the pleasure and satisfaction derived from the process of engaging in activity. More specifically, intrinsically motivated students are motivated to learn, perform, and/or succeed for the internal feeling of satisfaction (Ryan&Deci, 2000;Gottfried,1985). Intrinsically motivated students are interested in learning and achieving, in turn, tend to be associated with creativity, cognitive flexibility, and self-esteem (Kasser, 2002). Intrinsically motivated students view their personal choice are important when they decide whether to pursue a goal; they experience their goal- seeking activities as meaningful; and they enjoy performing their tasks, regardless of whether or not they succeed in reaching their goals and regardless of feedback from the environment (Ames, 1992). They see their mistakes or failures as valuable experiences and opportunities to learn. Research has shown that students who are intrinsically motivated are more likely to persist when experiencing an academic challenge (Boyd, 2002), exhibit higher academic performance (Goldberg& Cornell, 1998), and adopt learning goals.

Traditionally, research studies have indicated that learning orientation is associated with intrinsic motivation, and performance orientation is usually related to extrinsic motivation (Rawsthorne & Elliot, 1999). Elliot and Church (1997) examined the effects



of goal orientation on college students' intrinsic motivation and graded performance. Results showed that learning goals facilitated intrinsic motivation and performance goals had the strongest predictability of students' final grades. In addition, performance goals had negative effects on intrinsic motivation and graded performance.

Heintz & Steele-Johnson (2004) examined relationships between goal orientation dimensions and intrinsic motivation. Results revealed that learning goal orientation is related to intrinsic motivation.

Another motivational construct that is important for understanding students' motivation is self-efficacy, or belief that one is capable of successfully performing a particular task. Students are said to have high self-efficacy for a task when they believe they possess the capabilities necessary to perform the task successfully. However, if they believe that they don't have the necessary capabilities, then they would be said to have low self-efficacy for the task. Self-efficacy can be regarded as the belief that one can master a situation and produce favorable outcomes (Bandura, 1997). Schunk (1991) proposed that self-efficacy is critical to the academic achievement. He hypothesized that self-efficacy influences students' choice of activities. Thus, students with a high level of self-efficacy will select more challenging learning tasks, therefore expending more persistence and effort to obtain higher achievement outcomes, whereas students with low level of self-efficacy will avoid difficult and challenging tasks that require more effort and persistence; Consequently, they obtain lower achievement outcomes.

Students with higher self-efficacy expend greater effort, exhibit more persistence and demonstrate greater resilience in the face of adverse situations. In addition, the research literature includes several studies which emphasize the effect of self-efficacy on numerous positive outcomes as well as academic achievement. For example, Bell & Kozlowski (2002) conducted an experimental study to examine the relationships among goal orientation, self-efficacy, and task performance. The results of the study revealed that only learning goal orientation was positively and significantly related to self-efficacy and task performance. Schunk and Ertmer (1999) also found similar results based on their experiments with US college students, identifying that learning goals led to higher self-efficacy, self-regulatory competence, and strategy use. Results indicated that learning goal-oriented students have stronger intrinsic motivation and positive attitudes toward learning activities than performance goals.

Thus, the results of studies examining the relationship of self-efficacy, goal orientation and motivation are inconclusive. Also, there exists a lack of attention given to the study of these variables. Specifically, through reviewing the literature, the researcher hasn't encountered any study addressing this issue in Jordan or in Arab countries. Therefore, this study will attempt to address significant gaps in literature regarding the relationships between goal orientation, motivation, and self-efficacy.

## Method

### Participants:

The population of this study consisted of (1120) undergraduate students, who were enrolled in the faculty of educational sciences in Al-Hussein Bin Talal University (AHU) in the academic year 2009 / 2010, who represent all levels of study at (AHU). For the purpose of this study, a random sample was chosen from the population, it consisted of (460) students representing (41%) of the population of the study. Their ages ranged between 18 – 22 years.

### Instruments:

Participants completed self-report measures of goal orientation, self-efficacy, and intrinsic motivation. Each is described at length below.

### Goal Orientation:

Goal orientation questionnaire which was developed by Midgley, et al., (1996) was used to measure students' goal orientations. This questionnaire composed of three subscales: a learning goal orientation, a prove performance goal orientation, and avoidance goal orientation. Participants rated each item on a 5 point Likert scale ranging from totally disagree ( 1 ) to totally agree ( 5 ).The learning goal orientation scale was a unit weight mean of six items that focused on efforts to improve skills and learning new material. The performance goal orientation scale was a unit weight mean of five items assessing student's desires to outperform others. The performance - avoidance goal orientation scale was a unit weight mean of five items concerned with students' attempts to hide their perceived inability.

A confirmatory factor analysis was conducted on the achievement goal orientation items to examine the factor structure of the three sets of items (learning, Performance, avoidance). It was found that learning, Performance, and avoidance goal orientation all loaded on different latent factors. All three subscales are characterized by statistical reliability.

A Cronbach alpha of (0.85) was reported for the learning goal orientation scale. In terms of the performance goal orientation scales, a reliability estimate of (0.89) was reported for the performance goal orientation scale, and a (0.74) was reported for avoidance goal orientation scale.

In this study, to ensure that the content of the questionnaire is valid, it was handed to a jury of six professional faculty members. The members of jury were asked to evaluate the appropriateness of the questionnaire to the whole purpose of the study. Consequently, they sent letters in which they ensured the validity of the questionnaire and recommended some modifications which were taken into consideration. The internal consistency of the

instrument was determined two weeks prior to the final applied. Using a sample of (60) students (32 Females and 28 Males) who were studying in AHU. This sample of students was also excluded from the sample of the main study. The calculated coefficient alpha reliability was (0.83) for the learning goal orientation, (0.84) for performance goal orientation, and (0.82) for avoidance goal orientation. This figure suggests that the instrument is suitable to measure students' goal orientations.

### **Intrinsic Motivation:**

Harter's intrinsic orientation scale was used to measure student's intrinsic motivation (1981). The instrument consisted of (30) items that relate to motivation for classroom learning in five dimensions: preference for challenge, curiosity, independent learning, independent judgment about what to do in the classroom, and internal criteria for evaluation of success. Each dimension contains (6) items, each item is scored on an ordinal scale from (1) to (4) point, where a score of (4) indicates the maximum intrinsic motivation, and a score of (1) indicates non-intrinsic (extrinsic) motivation. The reliability of each subscale was assessed by employing a reliability coefficient (Kuder-Richards on formula 20) a cross samples from New York, California, and Colorado, reliability range from ( 0.78 to 0.84 ), ( 0.68 to 0.82 ), ( 0.70 to 0.78 ), ( 0.72 to 0.81 ) and (0.75 to 0.83) for challenge, independent mastery, curiosity, judgment, and criteria subscale respectively.

In this study, the reliability coefficient was calculated using test-retest and was found to be (0.82, 0.75, 0.79, 0.80, 0.69) for challenge, independent mastery, curiosity, judgment, and criteria subscales respectively. In this study, to clarify the validity of the instrument, the researcher translated the items into Arabic language and then a specialist in educational psychology was asked to translate the Arabic items into English language to ensure acceptable validity indices and validated translation. The items were then given to another specialist who is proficient in both languages to compare the Arabic translation with the original.

### **Self-efficacy:**

The self-efficacy scale (Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs & Rogers, 1982) was translated into Arabic to be accessible by students of AHU. The original scale consisted of 12 items. After translating the items, a specialist in psychology and education was asked to translate the Arabic items into English as a backup translation in order to ensure accepted validity indices and validated translation. The items were then given to another specialist who is proficient in both languages to compare the Arabic translation with the original. Thus, an accepted instrument with significant validity was available.

The scores on the scale ranged between 12 and 60 on a continuum starting with strongly disagree having one point value and strongly agree having a five point value. So, the levels of self-efficacy were determined with two levels as follow:(a) low self-efficacy (30and less);and (b) high self- efficacy (31 and above). A correlation coefficient between

the items and the total score was found to be ranging between 0.41 and 0.90. The Cronbach Alpha coefficient was also calculated using test-retest and was found to be 0.81 which is generally an acceptable level.

### **Procedures:**

The instruments were administered to the participants in their regular classrooms by the researchers. The researchers explained to the participants the purpose and the importance of their participation in this study. In addition, the researchers assured the participants of the confidentiality of their responses and that their responses would be used only for research purposes.

Then, the question booklets were distributed and instructions were given to the participants on how to answer them. Approximately 40 minutes were given to complete the instruments. The participants' responses were scored by the researchers and were entered into the computer for statistical analysis. The data were analyzed using the SPSS package.

### **Results and Discussion:**

To facilitate understanding the results of this study, questions of the study are divided into two questions.

**Results related to study question (1):** What different goal orientations do students have?

To answer this question, the students' preferences percentage and frequencies were calculated and reported in Table 1.

**Table 1: Frequencies and percentage of students' goal orientation**

<b>Goal</b>	<b>Frequencies</b>	<b>Percentage</b>
Learning	280	60.8
Performance	70	15.2
Avoidance	110	23.9

As table 1 shows, a noticeable percentage (60.8%) of the students had a learning goal orientation, 15.2% had a performance goal orientation, and 23.9% had a performance-avoidance orientation. That is, most of students of the Faculty of Educational Sciences in AHU try to master the learning activities. Also, they have a need to achieve, and they have a focus on understanding, gaining knowledge, and improving

one's competence and ability. In addition, they focus on learning, mastery of the content or task, and set high goals for themselves.

According to students of that faculty, a success is internally referenced and performance of other people on the same task is irrelevant. In addition, the central belief of AHU students is that success will follow effort.

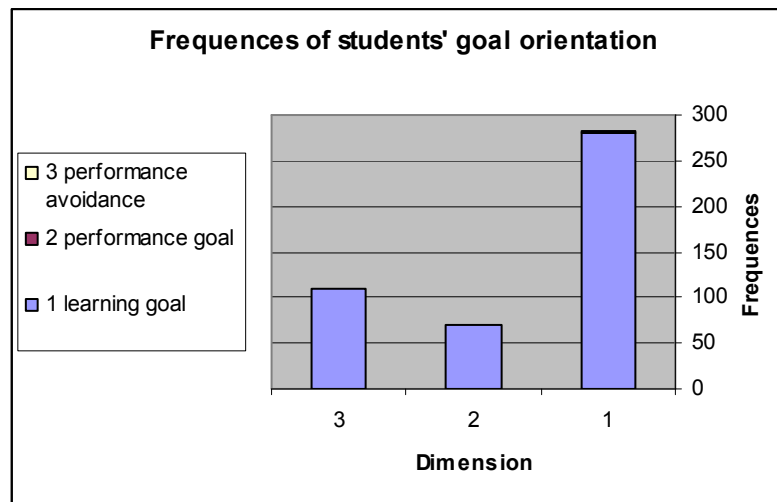


Fig.1. Frequencies of students' goal orientation

**Results Related to Study Question (2):** Are there correlation among students' goal orientations, academic self-efficacy, and motivation?

To answer to this question, the correlation coefficients between goal orientations subscales of learning, performance approach and performance- avoidance and academic self-efficacy are presented in Table 2. The Bonferroni technique was applied to prevent type 1 error due multiple tests and chance.

**Table 2: Correlations between goal orientations subscales and Academic self – efficacy ( n = 460 )**

Academic self-efficacy	Learning	Performance	Performance-avoidance
High Academic self-efficacy	0.001*	0.003*	0.317
Low Academic self-efficacy	0.345	0.421	0.001*

\* (P < 0.01)

Table 2 shows that there are significant correlations at the level of ( $\alpha=0.01$ ) between the goal orientations subscales and academic self-efficacy. Based on the Bonferroni technique, there are significant correlation at the level of ( $\alpha=0.01$ ) between leaning goal orientation and students with high academic self-efficacy ( $r =$

0.001). This means that students who have learning goal orientations perceive their academic self- efficacy as high.

Also, based on the Bonferroni technique, there are significant correlations at the level ( $\alpha=0.01$ ) between Performance goal orientation and students with high academic self- efficacy ( $r=0.003$ ). This means that students, who have performance goal orientation, perceive their academic self- efficacy as high.

Finally, Table 2 shows that there are significant correlations at the level of ( $\alpha=0.01$ ) between performance-avoidance goal orientation and students with low academic self- efficacy ( $r = 0.001$ ). This means that students who had performance-avoidance goal orientations perceive their academic self- efficacy as low.

This result means that students with high self- efficacy are more motivated and more active in learning. So, these students didn't seek to gain favorable judgments. Consequently, students with a high level of self- efficacy have more challenging learning tasks, therefore, expending more persistence and effort to obtain higher achievement outcomes. In comparison, students with low level of self- efficacy will avoid difficult and challenging tasks that require more effort and persistence, and thus, obtain lower achievement outcomes. This finding is consistent with previous research by Bell & Kozlowski,2002; Schunk & Ertmer (1999) which found that learning goals led to higher self- efficacy.

Correlation coefficients between goal orientation subscales of learning, performance approach and performance-avoidance and intrinsic motivation are presented in table 3. The Bonferroni technique was applied to prevent type 1 error due to multiple tests and chance.

**Table 3: Correlations between Intrinsic Motivation and Goal Orientation Subscales**

Goal Orientations	Challenge	Curiosity	Mastery	Judgment	Criteria
Learning	-0.249*	-0.295*	0.237*	0.257*	0.260*
Performance	0.221*	0.325*	-0.278*	0.291*	0.209*
Performance Avoidance	0.161	0.166	0.108	0.093	0.105

\* =  $P < 0.01$

Based on the Bonferroni technique, the alpha level was set at  $P < 0.01$ , and levels of goal of learning were positively related to challenge,  $r = -0.249$ ,  $P < 0.01$ , curiosity,  $r = -0.295$ ,  $P < 0.01$ , mastery,  $r = 0.237$ ,  $P < 0.01$ , Judgment,  $r = 0.257$ ,  $P < 0.01$  and criteria,  $r = 0.260$ ,  $P < 0.01$ . Also, the alpha levels was set at  $P < 0.01$  and levels of goal of performance was positively related to challenge,  $r = 0.221$ ,  $P < 0.01$ , curiosity,  $r = 0.325$ ,  $P < 0.01$ , mastery,  $r = -0.278$ ,  $P < 0.01$ , Judgment,  $r = 0.291$ ,  $P < 0.01$ , and criteria,  $r = 0.209$ ,  $P < 0.01$ . On the contrary, the table shows no correlation between performance - avoidance goal orientation and intrinsic motivation subscales. This

result means that students who had learning and performance goal orientation had intrinsic motivation, whereas students who had performance-avoidance goal orientation hadn't intrinsic motivation.

In other words, students who have learning goal and performance perceive difficult task as challenging, whereas students who have performance-avoidance perceive it as threatening. In addition, students who have learning goal and performance goal attribute their performance to effort, whereas students who have performance – avoidance attribute performance to external things-to factors outside of themselves. This finding support the previous studies (Heintz & Steele-Johnson, 2004; Elliot & Church, 1997) that showed students who have learning goal and performance goal demonstrate high levels of intrinsic motivation.

### Multiple Regression Analysis:

Table 4 shows the results of the stepwise regression analysis using intrinsic motivation and academic self-efficacy as predicted to patterns of goal orientations: Learning, Performance, and Performance-avoidance.

**Table 4: Hierarchical Regression of Goal Orientations, Academic Self-efficacy and Intrinsic Motivation**

Goal	Variables	R	R <sup>2</sup>	F change	Sig. F change
Learning	Academic Self-efficacy	.528	.277	135.621	.000
	intrinsic motivation	.410	.168	561.023	.000
Performance	Academic Self-efficacy	.384	.147	507.279	.002
	intrinsic motivation	.398	.150	511.764	.001
Performance-avoidance	Academic Self-efficacy	.297	.098	497.301	.537
	intrinsic motivation	.301	.090	478.293	.640

The results show that academic self-efficacy is a significant predictor of learning goal orientation,  $R^2 = .277$ ,  $F = 135.621$ ,  $P < .005$ . This result was supported by the close to moderate correlation between the two variables ( $r = 0.528$ ). Approximately 28% of the variance of the students' learning goal orientation was accounted by academic self-efficacy. The same result also showed that the students' learning goal orientation was significantly related to the students' intrinsic motivation,  $r = 0.410$ ,  $r^2 = 0.168$ ,  $F = 561.023$ ,  $F < .005$ . This means that almost 17% of the variance of the students' learning goal orientation was accounted for by intrinsic motivation.

Also, the results show that academic self-efficacy is a significant predictor of performance goal orientation,  $R^2 = 0.147$ ,  $F = 507.279$ ,  $P < .005$ . This result was supported by the close to moderate correlation between the two variables ( $r = 0.384$ ). Approximately 15% of the variance of the students' performance goal orientation was accounted by academic self-efficacy. The same result also showed that students' performance goal orientation was significantly related to the students' intrinsic

motivation,  $r = 0.398$ ,  $r^2 = .150$ ,  $F = 511.467$ ,  $F < 0.005$ . This means that almost 15% of the variance of the students' performance goal orientation was accounted by intrinsic motivation.

Finally, these results showed that the correlation between performance–avoidance and academic self–efficacy is not significant,  $r = 0.297$ ,  $r^2 = 0.098$ ,  $P = 0.537$ , since the academic self–efficacy variable accounts for almost less than 1% of the variance of the students' performance–avoidance variable. Also, the results showed that the correlation between performance-avoidance and intrinsic motivation is not significant,  $r = 0.301$ ,  $r^2 = 0.090$ ,  $P = 0.640$ , as the intrinsic motivation variable account for almost less than 1% of the variance of the students' performance-avoidance variable.

By the end, the researchers recommend conducting other studies on other variables in different universities. Also, the researchers recommend lecturers in universities to encourage students to adapt learning goal, and teaching goal orientation through courses.

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**APPENDIX**  
**Sample Items for Self-Report Scales**

<b>Scale</b>	<b>Sample Item</b>
Learning Goals (6 items)	It's important to me that I learn a lot of new concepts this year
Performance Goals (5 items)	One of my goals is to show others that class work is easy for me.
Performance-avoidance Goals (5 items)	It's important to me that I don't look stupid in calss
Intrinsic Motivation (30 items)	I work on problems to learn how to solve them
Self-efficacy (12 items)	I am sure I can do an excellent job on the problems assigned in this class

## **Jordanian college students' perceptions of inquiry experiences in science laboratories**

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### **Abstract**

The purpose of present research was to investigate to what extent college students at the public universities in Jordan were offered the opportunities to engage in scientific inquiry in the introductory science laboratories. The participants, N = 244, were randomly selected from students who were taking general physics, general chemistry, or general biology laboratories in the summer of 2011. To collect data, this research utilized a translated and validated version of PSI-S instrument. The current research used SPSS to conduct the descriptive and inferential statistics, and utilized WINSTEPS to check on the quality of items based on the Rasch model. It could be concluded that the opportunities offered to students varied across the dimensions of scientific inquiry aligned with reformed calls for engaging students in scientific inquiry. Students were given better opportunities for conducting investigations and collecting data than framing research questions and designing investigations. The less emphasis on framing questions and designing investigations might result from the poor preparation of teachers and providing students with step by step procedure. Students' perceptions of inquiry experiences across science labs were similar. Some implications and suggestions of further research are given in this paper.

**Keywords:** Inquiry, Inquiry-based laboratories, College Science Education

## Introduction

Improving learning and teaching science at all levels has been a concern for many nations around the globe. It is strongly believed that improving teaching science and increasing the number of well-prepared scientists and engineers is necessary for developing strong industrial and economical systems. However, teaching science at college level still needs a lot of work to move from traditional approaches to student-centered approaches which would be consistent with the basic assumptions of constructivism, and the nature of science.

Scientific inquiry causes a fundamental change in science education, moving it away from traditional teaching practices of lecture and demonstration to a collaborative relationship between teacher and student (Wetzel, 2008). Inquiry “refers to the activities of students in which they develop knowledge and understanding of scientific ideas, as well as an understanding of how scientists study the natural world” (NRC, 1996). It is ‘a multifaceted activity that involves making observations; posing questions; examining books and other sources of information to see what is already known; planning investigations; reviewing what is already known in light of experimental evidence; using tools to gather, analyze, and interpret data; proposing answers, explanations, and predictions; and communicating the results.’ (NRC, 1996). To better understand what inquiry is, the document *Inquiry and the National Science Education Standard (NRC, 2000)* identified the essential features of inquiry: ‘Learners are engaged by scientifically oriented questions; Learners give priority to evidence, which allows them to develop and evaluate explanations that address scientifically oriented questions; Learners formulate explanations from evidence to address scientifically oriented questions; Learners evaluate their explanations in light of alternative explanations, particularly those reflecting scientific understanding; Learners communicate and justify their proposed explanations.’ (NRC, 2000).

Science Education researchers further elaborated on the meaning of inquiry. Abd-El-Khalick et al. (2004) distinguished ‘Inquiry as means’ and ‘Inquiry as ends’. As to Abd-El-Khalick et al., ‘Inquiry as means’ refers to inquiry as an instructional approach to help students develop an understanding of science content while ‘Inquiry as ends’ refers to inquiry as instructional outcomes. Liu (2010) introduced science inquiry as a comprehensive construct for organizing science curriculum, teaching and learning science, and teacher professional development. Based on that, this comprehensive construct may include, but not limited to, students’ inquiring abilities, understanding science inquiry, and science teachers’ understanding and practices of inquiry as a teaching approach. Although the National Science Standards (NRC, 1996; NRC, 2000) and researchers clarified and elaborated on the definition of inquiry, many teachers are still uncertain about the term inquiry (Asay & Orgill, 2010).

To describe inquiry practices in classroom, Asay and Orgill (2010) analyzed articles published in *The Science Teacher* from 1998 to 2007 based on the five essential features of inquiry detailed in the Science Education Standards (NRC, 2000). They found that : " students often gathered evidence and participated in teacher-guided analysis of that

evidence, but seldom were they asked to grapple with scientifically oriented questions, create evidence-based explanations, connect explanations to accepted scientific concepts, or justify the results of their investigations to a larger group of peers" (Asay & Orgill, 2010).

Based on the degree of complexity in investigations through inquiry, Rezba, Auldridge, and Rhea (1999) stated four levels of inquiry:

- (1) Confirmation is the simplest level where students confirm a principle through an activity in which the results are known in advance;
- (2) Structured inquiry- Students investigate a teacher-presented question through a prescribed procedure;
- (3) Guided inquiry – Students investigate a teacher-presented question using students selected procedures; and
- (4) Open inquiry – Students investigate topic-related questions that are students formulated through student designed procedures. Understanding the nature and characteristics of these levels may help science educators plan and move gradually from a simple level to a more complex one.

Implementing and planning inquiry is not an easy task, it is challenging for many teachers. It requires several kinds of knowledge such as science content knowledge, science pedagogy knowledge, and knowledge of inquiry (Schuster & Cobern, 2011). Other barriers may limit implementing inquiry-based laboratory work such as lack of time, safety issues, management problems, class size, and the shortage of resources (Cheung, 2008; Zhang et al., 2003).

## **Review of Literature and Conceptual Framework**

Inquiry-based instruction has positive impacts on learning science (Anderson, 2002; Simsek & Kabapinar, 2010). The Inquiry-based laboratories provide students with the opportunity to involve actively in learning high school chemistry (Hofstein, Nahum, & Shore, 2001). Simsek and Kabapinar found that inquiry-based learning had positive impact on students' understanding of matter and scientific process skills. Martin (2010) also found a significant relationship between teachers' self-reported use of inquiry and students' achievement based on the data of 7377 US eighth graders who participated in TIMSS 2007.

To benefit from inquiry-based laboratory, Ketpichainarong, Panijpan, and Ruenwongsa (2010) reported a case study of using inquiry-based laboratory to help college students to construct their understanding of enzyme. Students were asked to design experiments, formulate hypotheses, perform experiments under the guidance of their instructors, and draw conclusions. Most of the students seemed to be ready for inquiry-based laboratory and they engaged in and enjoyed inquiry-based laboratory activities. As to Anderson

(2002), the research in this area has to move from focusing on the effectiveness of inquiry to focusing more on the dynamics of inquiry-based teaching and overcoming its challenges.

Inquiry-based instruction is basically aligned with the constructivist models of learning science. Inquiry is an active learning process in which students answer their questions through data analysis (Bell, Smetana & Binns, 2005). It is believed that scientific inquiry causes a fundamental change in science education, moving it away from traditional teaching practices, teacher directed approach, to student-centered approach (Wetzel, 2008; Justice, Rice, Roy & Hudspith, 2009). Inquiry-based instruction usually offers concrete and hands-on science in a way students design their experiments which may improve learning science and attitudes toward science. It is fully understood that conducting hands on science in a traditional way does not guarantee inquiry (NRC, 1996).

In sum, inquiry is based on and aligned with basic assumption of the constructivist models of learning science. Moreover, Inquiry offers concrete and hands-on experiences which may improve learning science and attitudes toward science. This research was driven by the huge potential for inquiry in improving the way college science is taught. The current study is grounded on the definition and essential features of inquiry introduced by the document *Inquiry and the National Science Education Standard* (NRC, 2000). Based on that, the present study explored to what extent Jordanian college students are offered the opportunity to practice the essential features of inquiry in science laboratories.

## **Research Problem**

Traditional laboratories fail to offer students with appropriate environment for learning science meaningfully (Roychoudhur & Roth, 1996). Although many of science faculty members recognize the importance of inquiry-based approach, they may not know how to move from traditional approaches toward inquiry teaching (Reiff, 2004; Gengarelly & Abrams, 2009). Many science faculty members over-focused on memorization and ignored illustrations, and applications; the poor instruction in undergraduate science has been recognized as a national problem for many nations (Brown, Abell, Demir, 2006).

Many science faculty members may lack a working definition and a practical framework of inquiry to guide their instructional practices (Bell, Smetana & Binns, 2005). Brown et al. (2006) found that science faculty members held “an all-or-nothing view” of inquiry which may constrain them from considering inquiry in their teaching introductory college courses. In other words, students may have not been offered the opportunities to implement inquiry while learning science. Thus, recognizing the concerns about inquiry is important for improving inquiry-based pedagogy at college level of education. Yet, the literature on the inquiry-based instruction on college science teaching is very thin (Brown, Abell & Demir, 2006; Crawford, 2009).

This research may help educators diagnose and improve the laboratory-based instruction through inquiry. Diagnosing the dynamics of teaching laboratories may be the first step toward improving teaching undergraduate laboratories in Jordan and many countries that have similar educational context. Also, the current research provides an international perspective of inquiry experiences in undergraduate science laboratories.

The purpose of the present research was to investigate to what extent college students at the public universities in Jordan were offered the opportunities to engage in the scientific inquiry in introductory science laboratories (physics, chemistry, and biology). The findings would inform us if science faculty members were moving toward inquiry-based instruction. In particular, this research aimed at answering the following research questions:

- (1) To what extent Jordanian college students are offered the opportunities to implement inquiry in introductory science laboratories; and
- (2) Are there statistically significant differences exist in the levels of inquiry across the subjects of science laboratory (physics, chemistry, and biology).

## **Methodology**

### **Participants**

The data was collected in the summer of 2011. The participants,  $N = 244$ , were randomly selected from students who were taking general physics, general chemistry, or general biology laboratories. The resulting sample consisted of 96 males and 146 females, a few cases missed information. About 74 percent of participants were majored in science and engineering. The participants were enrolled in general physics labs ( $n_1 = 107$ ), general chemistry labs ( $n_2 = 97$ ), and general biology labs ( $n_3 = 36$ ).

### **Instrument and Data Collection**

To collect data, this research utilized a translated version of PSI-S instrument (Campbell, Abu- Hamid & Chapman, 2010). The Instrument composed of 20 items separated into five categories. These categories are:

- (1) framing questions;
- (2) designing investigations;
- (3) conducting investigations;
- (4) collecting data; and
- (5) drawing conclusions.

Each stem has five options (1 = almost never, 2 = seldom, 3 = sometimes, 4 = often, 5 = almost always). Evidence for the reliability and validity of PSI-S for assessing to which students are experiencing inquiry in science laboratories were provided (Campbell, Abu-



Hamid, & Chapman, 2010). The development of the instruments went through several steps and stages. They estimated the internal consistency of the instrument and conducted factor analysis (see Campbell et al. for more details).

### **Validity of Translated Version of PSI-S instrument**

Two bilingual faculty members translated the English version into Arabic. The Arabic version was compared to the original English version and evaluated by 4 bilingual faculty members to check on the quality of translation and to make sure that the items have the same meaning in both versions. The Arabic version was pilot tested with a group of 20 students; the participants of the pilot study were asked to provide responses to the twenty items and provide the researchers with any comments regarding any ambiguous statements or terms. For example, the initial, literal, translation of "investigations" was not clear for students. Thus, some statements were reworded and the final draft was checked again by two science education faculty members. The Cronbach's Alpha for the translated version of PSI-S was 0.81.

We utilized the Rasch model to provide evidence that support the validity of the instrument. Rasch analysis programs (e.g., WINSTEPS) provide INFIT and OUTFIT mean square statistics to evaluate how well each item fits the model. FIT statistics refers to whether the items are of sufficient quality to interpret the outputs in interval scale, and "whether each item contributes to the measurement of only one construct" (Bond & Fox, 2007). "MNSQ is a chi-square model-data-fit statistics based on the difference, or residuals, between the observed response patterns and the predicted response patterns based on Rasch model. Bond and Fox considered the (MNSQ) values between 0.7 and 1.3 as acceptable indicators for fitting the model. The values of INFIT MNSQ of all items but two, items 5 and 10, fall within the accepted range for fitting the model as shown in Table 1. Based on the results of FIT statistics, it can be concluded that overall the data fit the model very well and the items contribute to the measurement of one construct.

***Table 1: INFIT MNSQ of items of PSI-S instrument***

<b>ITEM</b>	<b>Measure (Logits)</b>	<b>INFIT MNSQ</b>
ITEM5	2.32	1.77
ITEM10	1.85	1.7
ITEM2	0.92	0.86
ITEM1	0.76	0.93
ITEM4	0.66	1.02
ITEM3	0.52	1.04
ITEM8	0.03	0.94
ITEM18	0.03	0.51
ITEM20	-0.01	0.76
ITEM19	-0.20	0.77
ITEM13	-0.22	0.89
ITEM17	-0.22	0.71
ITEM7	-0.50	1.28
ITEM14	-0.56	1.02

ITEM	Measure (Logits)	INFIT MNSQ
ITEM16	-0.61	0.82
ITEM15	-0.71	0.90
ITEM6	-0.75	1.25
ITEM9	-0.97	1.26
ITEM11	-1.13	1.06
ITEM12	-1.23	1.04

## Data Analysis

Both of SPSS and WINSTEPS software were used to analyze the data of the current study. WINSTEPS was used, as mentioned above, to check on the quality of items based on the Rasch model. SPSS was used to conduct the descriptive and inferential statistics related to the research questions.

To answer the first research question, a descriptive statistics was conducted to provide the mean and standard deviation of each item and dimension as described in Table 2 below.

***Table 2: Descriptive statistics of students' responses to the items of PSI-S instrument***

Item	Mean	Standard Deviation
<b>A. Asking questions/ Framing Research</b>	<b>2.82</b>	<b>0.90</b>
A1. I formulate questions which can be answered by investigations.	2.77	1.12
A2. My research questions are used to determine the direction and focus of the lab.	2.61	1.07
A3. Framing my own research questions is important.	3.02	1.18
A4. Time is devoted to refining my questions so that they can be answered by investigations.	2.87	1.22
<b>B. Designing Investigations:</b>	<b>3.26</b>	<b>0.61</b>
B1. I am given step-by-step procedures before I conduct investigations.	4.52 (1.5*)	0.83 (0.84)
B2. I design my own procedures for investigations.	4.12	1.04
B3. I engage in the critical assessment of the procedures that are employed when conducting investigations.	3.94	1.1
B4. I justify the appropriateness of the procedures that are employed when I conduct investigations.	3.5	1.12
<b>C. Conducting Investigations</b>	<b>3.70</b>	<b>0.53</b>
C1. I conduct the procedures for my investigation	4.26	0.97
C2. The investigation is conducted by my teacher in front of the class.	4.23 (1.78*)	1 (0.99)
C3. I am actively participating in investigations as they are conducted.	4.34	0.82
C4. I have a role as investigations are conducted.	4.39	0.81
<b>D. Collecting Data</b>	<b>3.95</b>	<b>0.76</b>
D1. I determine which data to collect.	3.71	1.06
D2. I take detailed notes during each investigation along with other data I collect.	3.98	1.02
D3. I understand why the data I am collecting is important.	4.09	0.91
D4. I decide when data should be collected in an investigation.	4.02	0.93
<b>E. Drawing Conclusions</b>	<b>3.6</b>	<b>0.80</b>

Item	Mean	Standard Deviation
E1. I develop my own conclusions for investigations.	3.71	0.96
E2. I consider a variety of ways of interpreting evidence when making conclusions.	3.5	0.91
E3. I connect conclusions to scientific knowledge.	3.7	1.04
E4. I justify my conclusions.	3.53	1.09

\*The data of items of B1 and C5 were reverse coded.

As mentioned before, the twenty items of the scale were categorized into five dimensions. The results shows that dimension framing questions ( $\bar{X} = 2.82$ ,  $SD = 0.90$ ) had the lowest mean while the dimension of data collection had the highest mean ( $\bar{X} = 3.95$ ,  $SD = 0.76$ ). Basically this means that students were not offered good opportunity to frame their questions that guide investigations in science labs. On the other hand, students were given much better opportunity to collect data in a way aligned with scientific inquiry. The dimensions could be ranked from the lowest to the highest level of implementing inquiry as framing questions, designing investigations, drawing conclusions, conducting investigations, and then collecting data. In short, students were offered less opportunity to asking questions and designing investigations compared to the opportunities of conducting investigations and collecting data.

At the item level, items C1: I conduct the procedures for my investigation, C3: I am actively participating in investigations as they are conducted, and C4: I have a role as investigations are conducted, had high means, higher than 4.25. Thus, it could be concluded that students were highly engaged in conducting investigations in science labs. They also reported that they had a role as investigations were conducted ( $\bar{X} = 4.39$ ), actively participated in investigations ( $\bar{X} = 4.34$ ), conducted the procedures for investigations ( $\bar{X} = 4.26$ ). Similarly, students reported that they understood why the data they collected were important ( $\bar{X}_{D3} = 4.09$ ), and took detailed notes during each investigation ( $\bar{X}_{D2} = 3.98$ ). The results provided positive indicators for developing conclusions and connecting conclusions to scientific knowledge.

On the other hand, and most importantly, items A1 and A2 which were related to framing questions, the core of inquiry, and using research questions to determine the focus of the lab had relatively low means ( $\bar{X}_{A1} = 2.77$ ;  $\bar{X}_{A2} = 2.61$ ). The results also indicated that science labs were taught traditionally. For example, students were often given step-by-step procedures before conducting investigations ( $\bar{X}_{B1} = 4.52$ ), and the investigations were usually conducted by teachers in front of the class ( $\bar{X}_{C2} = 4.23$ ).

To determine if differences existed among science labs, a one-way ANOVA was conducted. The subject of lab (Physics, chemistry, and biology) served as independent variable while the level of implementing the scientific inquiry served as a dependent variable. The descriptive statistics showed that implementing inquiry was close among science labs (General physics:  $\bar{X} = 3.49$ ,  $SD = 0.45$ , General chemistry:  $\bar{X} = 3.44$ ,  $SD = 0.51$ , General biology:  $\bar{X} = 3.48$ ,  $SD = 0.46$ ). There was no statistical significant overall

difference in implementing inquiry between science labs, one-way ANOVA  $F(2, 231) = 0.263, p = 0.77 > 0.05$ .

## Discussion and Implications

It could be concluded that the opportunities offered to students varied across the dimensions of scientific inquiry aligned with reformed calls for engaging students in scientific inquiry. Students were given better opportunities for conducting investigations and collecting data than framing research questions and designing investigations. Students were usually given a demonstration and step by step procedures, “cookbook activities”, for the investigations they were conducting. The less emphasis on framing questions and designing investigations might result from poor preparation of teachers for inquiry (Anderson, 2002). Science faculty members need to be comfortable in doing inquiry before expecting them to implement inquiry in their teaching (Barrow, 2006).

Understanding the new roles of teachers and students may still be challenging for Jordanian lab instructors (Anderson, 2002). Therefore, to promote inquiry experiences for college science laboratories in Jordan, the five essential features of inquiry may be employed for developing science instructors’ understanding of inquiry (Kang, Orgill, & Crippen, 2008).

Further, they need to attend workshops which enabled them to see models for inquiry pedagogy, reflect on them, and prepare for integrating them in their teaching (Barrow, 2006; Gengarely & Abrams, 2009; Hogan & Berkowitz, 2000).

Furthermore, schools of science and schools of education are advised to work collaboratively to promote inquiry-based instruction (Duran, McArthur & Hook, 2004).

Providing students with “cookbook” activity sheet is key challenge for promoting inquiry experiences in college science labs; therefore, moving away from cookbook labs may be valuable (Brown et al., 2006).

The cookbook labs should be transferred to guided inquiry by asking students to develop their own procedures and methods (Bell, Smetana & Binns, 2005). Because implementing and planning inquiry is not an easy task, students should move gradually, with appropriate scaffolding, from low level to higher level of inquiry (Bell, Smetana & Binns, 2005).

Students may be asked to design experiments, formulate hypotheses, perform experiments under the guidance of their instructors, and draw conclusions (Ketpichainarong, Panijpan, & Ruenwongsa, 2010).

Researchers are invited to investigate in some depth, science faculty members’ pedagogy knowledge, and knowledge of inquiry. They are also invited to develop a working research-based framework to guide the workshops and other professional development models to promote inquiry experiences in science laboratories.

Students' perceptions of inquiry experiences across science labs (physics, chemistry, biology) were similar. In other words, students' perceived similar inquiry experiences in general physics labs, general chemistry labs, and general biology labs though the nature of these labs is different. It was expected, for example, that the students would be offered better inquiry experiences in physics labs more than chemistry labs which are more dangerous, but that was not the case. Therefore, the above discussion, interpretations, and implications may be applied similarly to the general physics labs, general chemistry labs, and general biology labs.

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## **Availability of *Universal Education Principles* in University Classrooms**

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### **Abstract**

The primary purpose of this study was to determine the availability of the principles of universal education in the university social studies book in Jordan through content analysis. The researchers created a list 99 principles distributed over five areas: human rights (22 items), United Nations (18 items), world peace (21 items), environmental rights (15 items), and country and other cultures (23 items), which were constructed as an instrument. Further, the instrument was found to be valid and reliable. A content analyses via Viatna approach along with descriptive statistics were carried out. Results of the study indicated the availability of these principles with various degrees in the social studies book under study. Of those principles, the most manifested was the area of world peace and cultures of other countries. The study ended by offering a number of recommendations for the field of study.

**Keyword:** Universal Education, Principles, University Social Studies Book, and Jordan.



## Introduction

Humans have realized throughout history that the risks and destructions brought by regional and global conflicts have caused negative consequences on the economic, social, and psychological levels. Based on that, it is becoming clear that the solution to all of these problems is to find a universal language of cooperation and understanding between nations and peoples. This effort had led to the establishment of multiple world agencies such as the United Nations, International Bureau of Education, and the UNESCO to address issues related to international peace and security, international relations, education for international understanding, and cooperation between nations (Hamidah et al, 2000).

In 1974, the General Conference of UNESCO approved the concept of universal education to encompass various aspects including education for international understanding, cooperation and peace, education for human rights, respect for other cultures, the development of the capacity of individuals to communicate with others, the development of global awareness about the interdependence between nations and peoples of the world, and the development of preparations of the individual to participate in solving local problems and contribute to solving the problems of the world (Le Roux, 2001). Margaret and Hartoonian (1995) added that universal (world) education is a combination of multiple fields to prepare students for life in a world with increasing requirements by providing them with world education. World education may encompass topics such as human rights and social justice; local and global conflicts and the spread of unconventional weapons; cultures and belief systems in the world; environment and energy resources; and problems of increasing population growth (Thomas et. al., 1998).

Education in general has the purpose of improving relations and inspires the spirit of mutual understanding and peace between different peoples and nations. In particular, it is possible to incorporate the aspects of universal education into various curricula especially anthropology, social studies, geography, and music (Cushner, 1990).

In viewing the social studies curriculum, it is obvious that it has the prospect for developing global concepts throughout studying the history of nations and peoples along with their lifestyles, their hopes and problems, and the manifestation of the modern civilization with the impact it had on each nation to achieve human progress (Allagany & Radwan, 1979). Teaching social studies should be aimed at developing the learners' national spirit and world views, where he/she is able to view the world as a whole and realize that people cannot live in isolation from others. The learners should be able to realize that parts of the world are affected by and dependent on each other due to technological advancements and that modern civilization is the outcome of the efforts of different nations. Not to mention that cooperation and understanding between nations and peoples should be based on mutual respect (Ibrahim & Ahmed, 1979).

The Ministry of higher Education in Jordan similar to other global agencies has stressed the importance of universal education represented by its various laws and regulation indicating that international understanding should be based on justice and equality, that people should have freedom to positively participate in world civilizations and be subjected to world issues and problems, and recognize the importance of international understanding based on truth, justice, and the preservation of the environment resources

Previous research concerning the study of the concept of universal education has been explored to serve as a foundation for our current research. For example, a study by Williams (2002) aimed to examine the role of social studies textbooks in Alberta to teach human rights. A content-based analysis was carried out on a selected number of social studies text books. The author created a detailed checklist to identify human rights issues in the contents of those textbooks. The study concluded that the concept of human rights is not effectively incorporated within the textbooks of social studies and therefore, sources of support in the form of education should be provided on human rights. Another study by Archibald (2001) aimed to develop a program in universal education in Ontario, Canada. The researcher established two units, the first dealing with the situation of the world and the other one designed for students who had disrupted the issues submitted in the first unit. The aims of the units were to encourage the global development of students and give them the authorization and a stronger power to strengthen their point of view about global education.

Yamasaki (2002) investigated the impact of learning human rights on students' cognitive, mental, emotional, and practical developments. A sample of 18 students responded to a researcher-designed survey. Results of the study indicated that human rights education (i.e., racial discrimination, hatred, injustice, hunger, and poverty) are important subjects for students to be exposed to. Attari (1999) measured the awareness of the foreign students in the International Islamic University in Malaysia toward some global issues. A sample of 824 students responded to a questionnaire with two dimensions: one related to the level of global awareness and the second on the position of participants on some global issues. Results of the study indicated that students have high levels of global awareness and their position on global issues is positive. The results also indicated a significant positive correlation between the level of global awareness and students' position on global issues.

Brahmin's (1997) study aimed to identify the interest of social studies books in the principles of universal education based on content analysis and teachers' perceptions. A list of universal education principles that the books under study should take care of was devised by the researcher in the form of a questionnaire and was applied to a sample of 91 instructors in the northern part of Jordan. Results of the study indicated that social studies books was interested in the principles of the country and other cultures, human rights, rights and the environment, and world piece, respectively. Finally, a study by Meeks (1993) determined the relationship between the recognition of teachers and administrators in Texas to the concept of universal education and their acceptance to

include those principles in the curriculum. A sample of 434 teachers and administrators responded to two instruments (one to measure the extent of their understanding of the concept of universal education and second to identify the extent of their acceptance to include the principles of universal education in the curriculum). The results of the study indicated a strong positive relationship between the recognition of teachers and administrators to the concept of universal education and their acceptance to include those principles in the curriculum.

### **Statement of the Problem**

Perhaps the reason for the growing problems afflicting the world today is the lack of people's awareness of the meaning and concept of universal education. In spite of the attention Jordan has given to the subject of universal education, multiple university curricula including the curricula of social studies do not give adequate attention to such a trend (Brahmin, 1997). Therefore, the present study is intended to determine the availability of the principles of universal education in the university social studies book in Jordan

### **Research Objective**

The following research objective was formulated to achieve the primary purpose of the study:

*To determine the availability of the principles of universal education in the university social studies book in Jordan*

### **Importance of the study**

The outcomes of the present study are important for a number of reasons. First, the developed list of universal principles can be used as a diagnostic tool by educators and researchers for further evaluation of curricula in many other areas of education in Jordan. Second, planners of educational programs may use these principles in any future reform movements for better educating students about the global world. Third, the outcomes of this study may benefit universities in the preparation of teachers in colleges of education to focus on these principles within the programs of preparing pre-service teachers. Finally, this study may be used as a key stone to encourage future researchers to undertake studies and other empirical research on the principles of universal education.

### **Research Methodology**

#### **Book Sample**

The book sample of this study was the social studies book that is designed for university students with a major in teacher education at the Hashemite University in Jordan for the first semester of the academic year 2010-2011.

## Instrumentation

The researchers prepared a list of the principles of universal education that should be included in the social studies book based on an extensive review of previous research related to global education and social studies. This process has led the researchers to devise universal principles based on five areas including human rights (22 principles), the United Nations and its role in solving global problems (18 principles), the field of world peace (21 principles), the area of the country and other cultures (23 principles), and the area of humans and the environment (16 principles). A panel of university experts reviewed the 100 principles to determine its validity by reviewing, adding, and deleting where necessary. This process has led to minor changes in the wording of principles and the deletion of one principle from the area of humans and the environment (see Appendix 1). Based on these principles, an instrument was developed for the purpose of content analysis.

## Content Analysis

The researchers, based on content analysis for the social studies book considered the following:

- The goal of analysis was determined which is to identify the reality of the principles of universal education in the social studies book.
- Categories of analysis was identified which are the principles of universal education that should be integrated in social studies book.
- The unit of analysis was identified as follow: the word, sentence, and sub-sentence. The word was chosen as the unit of analysis because the concepts and terminology may come in the image of a single word or phrase.
- The reliability of the content analysis was measured using the Holsti formula (Holsti, 1969). The reliability coefficients are shown in Table 1.

***Table 1: Reliability Coefficients for the Universal Education Principles***

Principle	Reliability Coefficient
United Nations	0.94
Humans and the environment	0.80
World piece	0.80
Human rights	0.90
The Country and Other Cultures	0.82
Total	0.84

## Data Analysis

To achieve the primary objective of the study, frequencies and percentages were calculated for each of the principles of universal education to determine the availability of those principles in the social studies book.

## Results and Discussion

The primary objective of the study was to determine the availability of the principles of universal education in the university social studies books in Jordan. To achieve this objective, the researchers conducted an extensive review of previous research and theory related to the subjects of universal education and social studies. Based on that, a list of 99 principles was established which is grouped under five dimensions: the area of the country and other cultures, human rights, the area of world peace, the United Nations and its role in solving global problems, the area of humans and the environment. A content analysis was carried out in light of the above proposed principles and the results of this analysis are shown in Table 2.

***Table 2: Results of Content Analysis for the Universal Education Principles***

<b>Universal Education Principles</b>	<b>Frequency</b>	<b>Percentage</b>
United Nations	157	13.293
Humans and the environment	62	5.249
World piece	453	38.375
Human rights	215	18.204
The Country and Other Cultures	294	24.894
Total	1181	99.99

As shown in Table 2, the order of the availability of the principles of universal education in the social studies book was as follows:

- The field of world peace (453, 38.3%),
- the area of the country and other cultures (264, 24.8%),
- the field of human rights (215, 18.2%),
- the United Nations (157, 13.2%), and
- humans and the environment (62, 5.2%).

Perhaps the reason that the field of world peace achieved the highest percentage is due to the fact that a significant portion of the content of social studies book is focused on the conflict issues in the Arab nations and the world, its causes and effects, and the national liberation movements in the Arab world and the world, and their struggles against colonialism for their independence.

The area of the country and other cultures achieving the second in order of percentages is probably due to the fact that subjects of the book dealt with advances in science and industry in some countries, especially European ones. The contents may be made of things such as geographical explorations, industrial revolution, medical and scientific advances, and topics on European civilization. Some discussed how Europe had benefited from the Arab civilization and that it was a factor in the European Renaissance, which would throw light on why some people suffer from backwardness and weakness due to colonialism. The results also showed that the topics of humans, the environment and the

United Nations were less abundant in social studies books. This may be justified by the fact that the subjects of the books did not include international efforts to protect the environment. In turn the authors may have assumed that conferences on the environment were sufficient to ensure awareness. It may also have been the authors' presumption that items about environment are better covered in articles about geography. The reason for this is that the themes of the books investigated stressed the development of attitudes towards respect for the right of peoples to self-determination and support to achieve this.

With regard to the area of the United Nations, the lack of availability of those principles in the social studies books is due to the fact that the authors of the books did not stress the role played by the United Nations in resolving international disputes and problems, and efforts to achieve understanding and peace in the world.

## Recommendations

Based on the above discussion, the following recommendations are suggested:

- Authors of social studies books should give increased attention to the principles of universal education, and in particular the areas of the United Nations and humans and the environment.
- The content of social studies books should be carefully reviewed so that they take into account the principles of universal education and be (re-) written using the proportions that would balance the contents in regards to the principles
- Basic concepts related to global education should be identified and included in the textbooks that guide teachers of social studies.
- Increased attention should be given to programs of teacher preparation and to principles of the world during their pre-service session, so that they are able to introduce these in their classrooms to compensate for the shortfalls in school textbooks on the principles of universal education.
- Similar studies should be conducted for other learning materials.

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### **Appendix: Final list of the principles of universal education**

#### **First: World Peace**

- 1- To clarify the forms and types of conflict between nations and peoples.
- 2- Explain the causes of conflict between nations and peoples throughout the ages.
- 3- To emphasize the negative effects of conflict in its various forms.
- 4- To clarify the different ways to resolve the conflict peacefully.
- 5- Warning of the dangers of a nuclear war affects the world's population.
- 6- Provide examples of conflicts between nations and peoples are not resolved in the wars.
- 7- Provide examples of conflicts have been resolved peacefully through the ages.
- 8- Emphasis on the need to resort to peaceful means in solving problems between nations.
- 9- To emphasize the importance of achieving peace between individuals, groups and

nations.

- 10- Illustrate the evolution of the idea of peace through the ages.
- 11- Definition of the foundations of world peace based on justice.
- 12- Statement of the principles of peace from the viewpoint of Islam.
- 13- Photos highlight the struggle of peoples and nations.
- 14- To emphasize the need to respect international covenants and instruments in order to achieve peace.
- 15- Warning of the consequences of the arms race and the risks to human.
- 16- Definition of the efforts being made to reduce the arms of different countries.
- 17- Explain the importance of the policy of positive neutrality and impartiality in achieving world peace.
- 18- Link between the achievement of world peace and development in the areas of economic and social development of peoples.
- 19- Provide examples of peace treaties concluded between the different countries.
- 20- Emphasis on the need for disarmament and arms control in order to achieve world peace.
- 21- Highlight the role played by Jordan in the field of arms control.

## **Second: Human Rights**

- 22- Definition of the concept of human rights.
- 23- Trace the historical development of the concept of human rights.
- 24- Clarify the political and social dimensions of scientific and human rights.
- 25- To emphasize that the concept of human rights is different in different societies and eras.
- 26- To clarify the basic needs common to all peoples.
- 27- To emphasize the equality of all peoples irrespective of their color, sex or creed.
- 28- Statement of the positions of different countries of human rights.
- 29- To emphasize the importance of relationships based on respect and mutual trust among all peoples.
- 30- Emphasis on the core meanings contained in international conventions dealing with human rights.
- 31- Highlight the role of Jordan in the field of human rights.
- 32- Statement of the current situation of human rights at the global level.
- 33- Clarify the forms of racial discrimination and images in the world.
- 34- Anti-discrimination between individuals and groups because of race, creed or sex.
- 35- to draw conclusions on the negative policy of racial segregation in some countries.
- 36- Instill awareness of the value of the individual as a human being in human society.
- 37- Emphasis on the exercise of human rights within and outside the school.
- 38- Recognition of human rights through current events.
- 39- Assessment of local legislation in light of the principles of human rights as contained in international covenants.
- 40- Determining which human rights came in the Jordanian Constitution.
- 41- The definition of some humanitarian organizations related to human rights organizations such as the Red Crescent and Red Cross and Amnesty International.
- 42- Respect the right of peoples to self-determination and the maintenance of freedom



and independence.

- 43- To highlight Jordan's role in supporting peoples struggling for their freedom and independence

### **Third: Other Peoples and Cultures**

- 44- To emphasize that the individual member in his homeland and nation.
- 45- To emphasize that the individual member of the homeland is a great world.
- 46- Development of the ability of individuals to see themselves as residents in one planet and members of one sex.
- 47- Emphasis on the general characteristics of that link between human beings.
- 48- Study the conditions of people of different races (politically, economically, and socially).
- 49- Explain the reasons for the existence of differences between different peoples and races.
- 50- Study of cultural aspects of different peoples and races.
- 51- To emphasize the positive values in every culture from the cultures of peoples.
- 52- Emphasis on the fact that the disparity between peoples and different cultures in terms of power and progress.
- 53- Statement of the causes of progress and backwardness of the peoples and different cultures.
- 54- To highlight the cultural and civilization achievements of different nations.
- 55- Indicate the role of all the people in the making of civilization.
- 56- Emphasis on the role of Jordan's cultural heritage.
- 57- Emphasis on the role played by the Arabs and Muslims in the manufacture of Arab and Islamic civilization.
- 58- Statement of Arabs and Muslims in the manufacture of world civilization.
- 59- To emphasize that the call of Islam an explicit call for understanding between all peoples.
- 60- Emphasis on the relationships and inter-linkages between the peoples of the world.
- 61- To emphasize that the cultural communication between different peoples is an important means to understanding and rapprochement.
- 62- To emphasize that the understanding of other peoples need to increase knowledge about them and their civilization.
- 63- To emphasize that the protection of cultural heritage of humanity is a shared responsibility among all peoples.
- 64- Attention to the development of an individual's ability to communicate with individuals and groups from other nations.
- 65- Emphasis on the development of an individual's ability to continue to seek and to acquire knowledge about the peoples and the various issues.
- 66- Focus on the importance of tourism and trade, transportation and study abroad as a means to identify with other peoples.

### **Fourth: United Nations**

- 67- To clarify the historical circumstances of the birth of the United Nations.

- 68- Explain the importance of the role played by the United Nations.
- 69- Study the historical roots of some of the contemporary global problems.
- 70- Emphasis on the meanings set forth by the Charter of the United Nations to achieve understanding and world peace.
- 71- Illustrates the need to resort to the United Nations to resolve disputes and problems between the countries.
- 72- Emphasis on the need to abide by the decisions of the United Nations to achieve world peace.
- 73- Statement of ways and means of activating the role of the United Nations and the implementation of its resolutions.
- 74- Illustrate the obstacles that impede the United Nations work.
- 75 - To highlight Jordan's role in supporting the efforts of the United Nations in solving global problems are different.
- 76- Extract the contents of the Charter of the United Nations to achieve understanding and world peace.
- 77- Statement of results ranked on the contribution of the United Nations in solving international problems at all levels.
- 78- Clarify the role played by all peoples in supporting the efforts of the United Nations in solving problems.
- 79- Emphasis on the efforts of the United Nations in resolving some of the contemporary global problems.
- 80 - Giving examples of domestic problems, the United Nations played a role in the solution.
- 81- Give examples of global problems the United Nations played a role in the solution.
- 82- The definition of some organs of the United Nations and its various institutions.
- 83- Emphasis on the purpose and objectives that emerged from the United Nations stands.
- 84- Emphasis on the development of an individual's ability to make judgments on various public issues and propose solutions.

#### **Fifth: Humans and the environment**

- 85 - Environmental impact statement on the conditions and activities of the peoples.
- 86 - show the influence of different peoples way of life and protect the environment and benefit from their resources.
- 87 - to emphasize that the proper exploitation of man by his environment is a factor in the progress of peoples.
- 88 - Statement of the implications of the abuse of the rights of the environment.
- 89 - to emphasize the importance of the individual's role in environmental protection and proper exploitation.
- 90 - to emphasize the importance of exchanging information and ideas relating to the environment and the means of protecting the nations and peoples.
- 91 - emphasis on the need to preserve resources and protect the environment for the benefit of humanity.
- 92 - emphasis on the development of trends towards helping people who suffer from

poverty, disasters or problems in any place in the world.

- 93 - emphasis on the role of Jordan in the field of environmental protection and preservation.
- 94 - attention to activities related to the contribution of the students in the preservation of the environment.
- 95 - make room for thinking to propose solutions to environmental problems of national and global levels.
- 96 - the definition of some environmental problems at the national level and global development of the proposed solutions to them.
- 97 - indicate the role of Islam in the upbringing of the individual environmental education incorrect.
- 98 - the opportunity to see the results of international and national conferences on the environment.
- 99 - Statement of the United Nations role in solving environmental problems locally and globally.

# **Lifelong Learning Skills among University Students: The Key to Continuous Employment**

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## **Abstract**

The primary purpose of this study was to determine the capacity of university students in Jordan for effective lifelong learning. A sample of 174 senior students responded to the effective lifelong learning survey. The survey consisted of 59 items related to seven domains of learning: changing and learning, critical curiosity, meaning making, resilience, creativity, learning relationships, and strategic awareness. Results of the study indicated, based on participants' perceptions, a high level of students' capacity for effective lifelong learning (ELLL) in the university under study. Examples of ELLL included going on learning for a long time, questioning the things they are learning, learning about things that really matter to them, trying out new learning in different ways, and working on problems with other people. Results also indicated that there were no significant differences in assessing the capacity for effective lifelong learning based on gender and academic major. Analysis of the data suggested a number of theoretical and practical recommendations that are applicable to a wide variety of institutions.

**Keywords:** Lifelong learning, skills, career success, university students, employment, and Jordan.

## Introduction

The continuous changes in the work environment of the twenty-first century has prompted employers to seek individuals with essential employment attributes, other than general education, such as lifelong learning skills (Rothstein, Wilder, & Jacobsen, 2007; Stewart & Knowles, 2000). Lifelong Learning has been regarded as a survival tool for individuals, organizations, and the economy as a whole (Herriot & Pemberton, 1995). It is also known that lifelong learning is a mean to meet the demands and expectations of the new knowledge economy and is a central factor for economic sustainability and growth (Selwyn, Gorard, & Furlong, 2006).

The ability of individuals to lead a successful and fulfilled career will depend on the ability to adapt frequently to changing skills requirements and to learn quickly throughout their lifespan (Barth, 2001; Boyd, 2003; Bracey, 2003; Crick & Wilson, 2005; Hargreaves, 2005; Springer, 2006). Individuals are encouraged to learn and to acquire a variety of process skills in order to be able to address constantly changing learning needs, to maximize their employability potential, and to give a competitive edge to organizations (Asundi & Karisiddappa, 2006; Senge, 1990; Price, 2000). Further, it is the goal of lifelong learning to improve the liberation of learning for the individual, to promote improved transformation of the knowledge, and to encourage social change (Merriam, Caffarella, & Baumgartner, 2007). This one particular attribute is currently being given substantial attention by higher education institutions and the industry (Cervero, 2000; Kember, Leung, & Ma, 2007).

In the literature, lifelong learning is defined as any type of learning at any phase of life from birth to death. For example, Dave (1975) defined lifelong learning as a comprehensive concept which includes formal, non-formal, and informal learning extended throughout the life-span of an individual to attain the fullest possible development in personal, social, and professional life. It includes learning that occurs in religious settings, the workplace, family environments, schools, and community settings for no other reason than to enjoy the learning process and to seek personal growth. Crick and Wilson (2005) defined lifelong learning as learning that is continuous and takes-place throughout one's life, involves both formal and informal learning, is self-directed, intentional, relational, and transformative. This requires individuals to always be open to new ideas and learning opportunities throughout life (Costa & Kallick, 2004). Lifelong learning involves the continuous development, acquisition, and application of knowledge, skills, values and wisdom across the lifespan to upgrade oneself for employability (Ralph, 2000). A consistent focus within the definition of lifelong learning, though, is on the potential for learning (Vorhaus, 2002).

Previous research by Candy (1991) and Candy, Crebert, and O'Leary (1994) proposed five basic attributes of the lifelong learner. These attributes are:

- (a) helicopter vision (the awareness of how knowledge is created and its limitations, the need for an individual to develop epistemological awareness,

that is, beliefs about knowledge and learning that reflect the changing, sometimes uncertain and complex nature of knowledge (Pintrich 2002). This characteristic is perhaps the 'keystone' of being a lifelong learner, because along with having the skills and ability for lifelong learning, an individual would need to have a certain view or particular beliefs about knowledge in order to possess the internal motivation to engage in a process of discovering new knowledge or building on existing knowledge;

- (b) an inquiring mind (love of learning, sense of curiosity);
- (c) personal efficacy (positive self-concept as a learner). Firmin and Miller (2005) argued that lifelong learners are motivated to learn through a positive attitude, confidence in themselves, and the ability to manage negative feelings effectively. Therefore, individuals with high self-efficacy are more likely to be engaged in lifelong learning;
- (d) information literacy (skills to research, manage, and evaluate information); and
- (e) learning skills (knowledge of own strengths, range of strategies, and ability to use).

The characteristics of lifelong learners have also been discussed by Knapper and Cropley (2000) who described several attributes of a lifelong learner including the ability to plan and assess own learning; being active rather than passive learners; learning in both formal and informal settings from peers, teachers, mentors and others; being able to integrate knowledge from different subject areas; and using different learning strategies for different situations.

A more focused research, which holds the foundation for our present research, was carried out by Crick, Broadfoot, and Claxton (2004) who identified seven domains of lifelong learning. Those domains are:

- (a) *Changing and Learning*. Effective learners believe that learning is learnable and that through effort their minds can grow stronger and bigger, just as their bodies can. They have a sense of getting better at learning over time and see learning as a lifelong process, and gain pleasure and self-esteem from expanding their ability to learn;
- (b) *Critical Curiosity*. Effective learners with critical curiosity have energy and drive for learning. They have the desire to find things out, thinking deeply below the surface, and asking questions. They are critical in their approach to learning and are more willing to reveal their questions in public. They are in charge of their learning and are motivated by challenge;
- (c) *Meaning Making*. Effective learners get pleasure from seeing how things 'fit together'. They tend to make sense of new things by using their own experiences and are interested in the big picture;
- (d) *Resilience*. Effective learners are resilient and robust in their learning. They like a challenge and are more willing to try things and to take risks. They have good mental effort and accept that sometimes learning is hard. They are not easily frustrated;

- (e) *Creativity*. Effective learners are imaginative and believe in new possibilities. They enjoy exploring new ideas and looking at things from different perspectives. They are more playful in their learning, as well as more purposeful;
- (f) *Learning Relationships*. Effective learners are well balanced and are able to be both private learners and social learners. They know the value of watching others to learn, and make use of others knowledge to expand their own. They understand that others provide resources as well as support and yet, they also know that effective learning may require time alone to study and ponder; and
- (g) *Strategic Awareness*. Effective learners are interested in learning about themselves. They will try different strategies in order to learn more about how they learn. They handle frustration and disappointment and are more reflective and self-evaluative. They like to plan and organize their own learning.

## **Statement of the Problem**

Lifelong learning skills have been viewed by higher education institutions, employers, and the industry as an important employment attribute. Successful individuals are those who adapt frequently to changing skills requirements, learn quickly throughout lifespan to advance their careers, and give a competitive edge to their organizations. Universities are being asked to prepare graduates with lifelong learning skills to deal with the demands of rapidly changing work environments. To the researchers' knowledge, research on the attribute of "lifelong learning" among university students is nonexistent in Jordan. This is an important area of inquiry that deserves immediate attention. Therefore, the primary purpose of this study was to assess the capacity of university students in Jordan for effective lifelong learning.

## **Research Objectives**

The following research objectives were formulated to accomplish the purpose of the study:

1. To assess the capacity of university students in Jordan for effective lifelong learning based on the following domains of learning: changing and learning, critical curiosity, meaning making, resilience, creativity, learning relationships, and strategic awareness.
2. To determine if significant statistical differences exists in the domains of lifelong learning based on the demographic characteristics of respondents including gender and academic major?

## **Importance of the study**

Findings from this study may provide administrators of higher education institutions in Jordan with a detailed knowledge regarding the status of lifelong learning among their students. This is extremely important issue considering the fact that the university system

has the responsibility to provide the national workforce with a body of competent graduates, who have the ability to continue to learn in a rapidly changing and ambiguous future, can adapt and survive changes throughout their careers; and prosper in ever-changing social and economic developments. Moreover, the data from this study may enable students to significantly reflect on their learning and to take further steps to improve their own learning. Further, this study adds up to the growing field of research that attempts to address the need for educational reform in an era of globalization. By understanding the lifelong learning attributes, reform planners in the Ministry of Higher Education, may take proactive measures to shift educators' focus toward preparing students to lead happy, healthy, and productive lives as global citizens and to instill learning characteristics throughout study plans. Finally, local and international business entities may benefit from this type of research, which may prompt them to modifying their working practices and environments to meet this new generation of lifelong learners.

## **Methodology**

### **Study Context**

The present study took place at the Hashemite University, the fifth state university in Jordan. Teaching began at the Hashemite University in the academic year 1995/1996. Presently the Hashemite University includes 11 faculties. It also includes the Deanery of Scientific Research and Higher Studies, the Deanery of Student Affairs, the Computer Center, and the Center of Studies, Consultations, and Community Service. Each semester, the Faculty of Educational Sciences offers the study skills course to all university students. Over the years, it has been noticed that almost an equal representation of all majors are included within this class. Students are required to choose among mandatory university courses where the study skills course is one of the most attractive courses often chosen.

### **Population and Sample**

The target population for this study was defined as all the Hashemite University undergraduate senior students. The accessible population consisted of a total pool of approximately 819 students enrolled in the study skills course with eight sessions offered during the second term of the academic year 2009/2010. The sample for this study included a total of 201 senior students representing various academic disciplines who volunteered to participate in the study. Surveys were returned by 174 students, a response rate of 86%. Based on their majors, students were classified into two faculties: The Humanities and Social Science Colleges (HSSC) ( $n = 79$  or 45.4%) and the Scientific Colleges (SC) ( $n = 95$  or 54.6%). The resulting sample included 69 males (39.7%) and 95 females (54.6%).



## **Instrumentation**

A two-part instrument was used to collect data in this study. The first part contained the Effective Lifelong Inventory (ELLI) survey adapted from Crick, Claxton and Guy (2004) and later modified by further research (Crick, Broadfoot & Claxton 2004), which consisted of 59 items distributed over seven domains of learning: changing and learning (4 items), critical curiosity (7 items), meaning making (7 items), resilience (13 items), creativity (7 items), learning relationships (10 items), and strategic awareness (11 items). Responses to the scale were measured on a five-point Likert scale (strongly agree to strongly disagree) plus a "does not apply" category. The ELLI was selected for this study because it can be used as a diagnostic tool to assess students' capacity for learning. Further, the ELLI may enable students to keep track of their own learning and employ learning strategies aimed to strengthen specific domains. The second part of the instrument contained information related to demographic characteristics of respondents. The ELLI items were generated by a substantial literature and reviewed by a subject matter expert technique to establish their face and content validity. Further, the construct validity of the instrument was established by previous research (Crick, Broadfoot & Claxton 2004). Pilot testing by 10,496 students from 122 institutions established reliability (reliability coefficients ranged from a low of 0.72 for learning relationships to a high of 0.85 for strategic awareness) (Crick & Yu, 2008).

## **Instrument Translation and Standardization**

Three translators (faculty members) bilingual in English and Arabic translated the English version of the ELLI into Arabic, and then the Arabic version was translated back into English by three different bilingual faculty members. A panel of five faculty members compared the original English version with the "back-translated" version to ensure that the item meanings were equivalent. Differences in meaning were resolved by repeating this process. The panel suggested modifying the tone of the instrument to represent an actual assessment of lifelong learning.

The Arabic version of the ELLI was pilot tested by 35 students. Feedback from these students also confirmed that the Arabic version of the survey has both face and content validity. When items were tested for reliability, four of the seven subscales were determined to exhibit "exemplary reliability" and the other subscales exhibited "extensive reliability" (using standards for instrument reliability from Robinson, Shaver, and Wrightsman, 1991). These tests suggest that the survey is suitable to measure effective lifelong learning of students in universities.

## **Data Collection**

The ELLI survey was distributed over a seven days period during the second semester of the academic year 2009/2010. Students were told the purpose of the study and assured that responses would be treated confidentially.

## Results

The first objective of the study was to assess the capacity of university students in Jordan for effective lifelong learning based on the following domains of learning: changing and learning, critical curiosity, meaning making, resilience, creativity, learning relationships, and strategic awareness.

The mean value for each of the seven dimensions of ELLL was above 3.97 (on a 5-point scale), indicating a high level of students' capacity for effective lifelong learning in the university under study.

As shown in Table 1, the mean of the creativity domain of learning is higher than all other means (4.33), followed by strategic awareness domain of learning (4.20), and resilience domain of learning (4.14) respectively.

***Table 1 Means and Standard Deviations for the Domains of Effective Lifelong Learning***

<b>Domains of Learning</b>	<b>Means</b>	<b>Standard Deviations</b>
Creativity	4.33	.38
Strategic Awareness	4.20	.26
Resilience	4.14	.29
Changing and Learning	4.13	.39
Learning Relationships	4.09	.32
Meaning Making	4.02	.38
Critical Curiosity	3.97	.40
Total	4.13	.20

The second objective was to determine if differences exist based on demographic characteristics of respondents, including gender and academic major. No significant differences were found between males and females or among the two levels of students' major (the Humanities and Social Science Colleges (HSSC) and the Scientific Colleges (SC)) on any of the seven domains of learning or on the overall domain of the effective lifelong learning scale ( $p \leq .05$ ) (see Tables 2 and 3).

***Table 2 The Differences between Male and Female University Students on Each Domain of the ELLL Scale***

<b>Domains of Learning</b>	<b>Gender</b>	<b>N</b>	<b>Means</b>	<b>Std. Deviations</b>	<b>t</b>	<b>p</b>
Creativity	M	69	4.31	.35	-0.57	0.57
	F	105	4.34	.39		
Strategic Awareness	M	69	4.17	.27	-1.17	0.24
	F	105	4.22	.25		
Resilience	M	69	4.12	.27	-0.77	0.43
	F	105	4.13	.23		
Changing and Learning	M	69	4.11	.37	-0.49	0.62
	F	105	4.14	.41		
Learning Relationships	M	69	4.11	.53	0.61	0.54
	F	105	4.08	.51		
Meaning Making	M	69	4.01	.40	-0.21	0.83
	F	105	4.02	.36		
Critical Curiosity	M	69	3.97	.33	0.04	0.96
	F	105	3.97	.44		
Total	M	69	4.12	.21	-0.56	0.57
	F	105	4.14	.19		

***Table 3 The Differences between Major of University Students (HSSC vs. SC) on Each Domain of the ELLL Scale***

<b>Domains of Learning</b>	<b>Faculty</b>	<b>N</b>	<b>Means</b>	<b>Std. Deviations</b>	<b>t</b>	<b>p</b>
Creativity	HSSC	79	4.32	.35	-0.28	0.77
	SC	95	4.33	.40		
Strategic Awareness	HSSC	79	4.20	.24	-0.02	0.97
	SC	95	4.20	.28		
Resilience	HSSC	79	4.12	.23	-0.73	0.46
	SC	95	4.12	.23		

Domains of Learning	Faculty	N	Means	Std. Deviations	t	p
Changing and Learning	SC	95	4.15	.26	-0.35	0.72
	HSSC	79	4.14	.41		
Learning Relationships	SC	95	4.12	.38	0.90	0.36
	HSSC	79	4.12	.31		
Meaning Making	SC	95	4.07	.33	-0.47	0.63
	HSSC	79	4.00	.38		
Critical Curiosity	SC	95	4.03	.38	0.57	0.56
	HSSC	79	3.99	.36		
Total	SC	95	3.95	.42	0.05	0.96
	HSSC	79	4.13	.19		
	SC	95	4.13	.20		

## Discussion

In today's world of work, employers are seeking individuals with essential employment attributes especially lifelong learning skills. Lifelong learning skills have been regarded as a survival tool for individuals, organizations, and the economy as a whole. The ability to adapt frequently to changing skills requirements and to learn quickly throughout lifespan is important to advance one's career. Therefore, the primary purpose of this study was to assess the capacity of university students in Jordan for effective lifelong learning. Another purpose was to determine whether responses to the seven domains of learning differed based on gender and academic major.

The study showed that university students under study perceived a high level of capacity for effective lifelong learning on each of the seven domains of learning used to assess ELLL. To elaborate, the survey results indicated that respondents agreed that there is a high level of effective lifelong learning related to creativity, strategic awareness, resilience, changing and learning, learning relationships, meaning making, and critical curiosity.

Survey respondents agreed that they are creative because they like to explore new ideas and look at things from different perspectives. With regard to the strategic awareness domain of learning, results indicated that university students will try different strategies in order to learn more about how they learn. They handle frustration and disappointment and are more reflective and self-evaluative. They like to plan and organize their own learning. The study also indicated a high level of effective lifelong learning related to the resilience domain, where university students perceived that they like challenging learning situations and are more willing to try new things and to take risks.

The changing and learning domain of lifelong learning also received high support from university students where they see learning as a lifelong process and gain pleasure and respect from expanding their ability to learn. With regard to the learning relationships domain, university students indicated that they like working on problems with other people because they help guide their learning. They know the value of watching others to learn and make use of others knowledge to expand their own. Meaning making domain of learning also received high support from university students where they tend to make sense of new things by using their own experiences and are interested in the big picture. The last domain of learning that received high level of agreement was critical curiosity, where university students indicated that they like to question the things they are learning by thinking deeply below the surface.

Another strand of the study investigated differences in responses based on demographic characteristics of respondents, including gender and major. Results showed no statistical differences in perceptions of university students related to the domains of lifelong learning based on gender and major. These results can be justified by the fact that there is an equal opportunity practice in Jordanian universities that allows male and female students to learn and perform their responsibilities without obstacles regardless of major.

It can be concluded from the above results that the university students under study may be characterized as effective lifelong learners regardless of their gender and major. The above results are consistent with the views of Crick and Wilson (2005) and Costa and Kallick (2004) who asserted that learning is continuous, which requires individuals to always be open to new ideas and learning opportunities. The results are also in agreement with other research indicating that individuals are encouraged to learn to address constantly changing learning needs (Asundi & Karisiddappa, 2006; Price, 2000).

It is worth mentioning that the above results are justified by the fact that the university under study has been regarded in Jordan as a leader in delivering high quality education consistent with the needs of individuals and the society. For example, the teaching-learning process emphasizes formal, informal, transformative and self-directed learning. Students are encouraged to learn from multiple sources including the library, the internet, and the community. Moreover, self-study groups are formed in classes that reflect their needs for continuous learning in a certain course to prepare them for continuous employment. Further, various courses demand students to be involved with multiple workshops and activities on the university campus to prepare them to becoming effective learners.

## **Future Study**

Finally, the study provided a number of theoretical and practical recommendations for the field of study. From the theoretical standpoint, it is suggested that this study be replicated in all public and private higher education institutions in Jordan. This replication may include refinement of the instrument through exploratory and confirmatory factor analyses. Future studies may also include testing the predictive and concurrent validity of

the scale with other academic-related variables such as academic achievement, propensity for community involvement, and attitudes toward future employment. Finally, it is worth identifying the nomological network that involves internal and external factors that may enhance lifelong learning.

From a practical standpoint, this study suggested that universities in Jordan should continue to put effort into the training and development of their faculty members to ensure that they are lifelong learners themselves. Moreover, university administrators can use the instrument from this study as a diagnostic tool to continually measuring students' progress from their first year enrolled in the university until their graduation. Further, faculty members should shift their teaching practice to student learning and skill development by remodeling courses to emphasize principles of andragogy (peer instruction, self-discovery, collaboration, and intellectual stimulation). Finally, it is hoped that this research will encourage universities in Jordan and elsewhere to create a strategic unit that actively focusing on enhancing lifelong learning for all students. This unit should include faculty members, members from the industry, and members from the community including retired professional parents and well-respected political, social, and religious figures.

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## **COMMENT:**

### ***Are the days of higher education as an institution numbered?***

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The topic is provocative and it is meant to be so. Your comments would be highly appreciated.

The papers in this edition covered a substantial spectrum of *Institutional Research* (IR). We should be grateful that their authors had spent time researching and studying the various aspects they did. To be sure of course IR is a continuum and is therefore impossible to curb its almost unlimited aspects.

One thing that is increasingly becoming obvious is that if we do not start doing something about these various aspects and now, I believe higher education as an institution will be seriously jeopardized.

In addition to the aspects covered in this edition of JIRSEA, we have *technology advances*, *continual reviews of curricula* requirements and *changing generational characteristics* to name a few. Importantly of course is technology's pervasive impacts, including in higher education, where they moulded the characteristics of the generation that makes up our school's and university's students, forced curricula changes and yet offered us immense opportunities for changing our teaching delivery methods to make the teaching and learning more effective.

However, my observations from several Southeast Asian countries and in many universities in Indonesia, Malaysia, Thailand and The Philippines show that few if any of us take advantage of the above opportunities. A lot of us are still perpetuating *rote learning*, *hand-holding* students, *writing exam questions that test memory and not knowledge*, *refusing to force students to use their initiatives and creativity*, *justifying what we do not do on the poor standards of the students or the poor standard of equipment*, *lack of consumables* or *poor maintenance*. If we continue to only give *complaints* we will only get the same responses as before, and that is no solution at all. Einstein once said that we cannot solve a problem with methods at the same level where the problem was first created.

The question we should ask ourselves is simply “*What are we doing about the problem?*” to which I know that a lot of us would respond by claiming that we do not have any authority for doing anything.

Others who tried to do something appear to suffer the consequences, perhaps in terms of promotion, bonuses and so on. Whether such claims are documented is of course the \$64 million question.

The above scenarios therefore beg for empowerment of academic staff, though at the same time requires academic staff to be ready to be empowered. Empowerment is a two-way street.

The empowering of and the acceptance of empowerment by academic staff is key to other potential improvements. For example, the introduction of technology in the classroom may vary from classroom to classroom and if the lecturer is not empowered or that the only educational technology aspect allowed by management is one particular one that may apply in one case but not in another, then the introduction of that technology will not be effective.

Another that needs close and quick action to address is the changing characteristics of our current students. A voluminous amount of work from some seven years of research in North America showed that the so called *Net-Gens* (network generations) have 12 distinct characteristics which can and will impact on our teaching and our teaching delivery. Indeed they may cause serious discussions on the fundamental philosophy of education itself. For example, not only are the net-gens multi-skilled, but are able execute those skills simultaneously. Translating this to our current education philosophy, this may mean that they are able to do A, B, C and D all at the same time, while our education philosophy says that they must do A first before B, B first before C and C first before doing D. We refuse to change at our own peril, because one of their characteristics is that they expect instant solutions and they loath bureaucracy.

We surveyed university students in some Indonesian, Malaysian and Philippines' universities to see if the Southeast Asian net-gens harbor similar characteristics as their counterparts in North America. Perhaps not so surprisingly, we found that the former matched only five of the latter's 12 characteristics. The correlations between students in the three countries surveyed are in excess of 0.94 indicating that there is little if any differences between Indonesian, Malaysian and Philippines' university students characteristics. Although research is still on going on this, we observe that the five characteristics matched by the Southeast Asian net-gens are *hardware-based* and the other seven are characteristics involving pedagogy and culture. This is not surprising because hardware is ubiquitous with new items usually being made available simultaneously around the globe while pedagogy and culture are obviously different.

Other surveys we conducted in Indonesia and Malaysia for example, showed that university students and lecturers in those countries lack reading and reading skills. In addition, the use of English in Malaysia had become polemical until the Prime Minister

declared that the use of English does not dilute Malaysians' nationalism. The lack of reading and reading skills naturally create many sorts of barriers including those that prevent improvements in pedagogy required to enhance the matching in characteristics with net-gens in North America.

Given the above, it is therefore imperative for academics and university managements in Southeast Asia to conscientiously look at how they could address their current pedagogy and cultural dilemmas to ensure that our universities in Southeast Asia effectively meet the challenges posed on them in this case.

On the global scale however, universities around the world will need to take note of the changes in the characteristics of the students they now teach and will teach in future in order to institute continual changes in the way higher education is managed and teaching is delivered.

Otherwise the days of higher education as an institution are numbered. As *Goethe* said "***It is not enough to know, we must act.***"