

A Comprehensive Look into the Learners' Transferable Skills Related to Constructivist Approach

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Abstract: The outcome of constructivist approach within teaching-learning process in developing learning and transferable skills of learners is questioned by putting emphasis on collaborative learning, experiential learning, developing portfolio and assessments as learning tool. The research study was taken place in Computer and Instructional Technology Teacher Education Program at Education Faculty of Higher Education Institution that was carried out by two senior instructors as researchers who taught Information Technology in Education course in two different classes. In research study; self-reports of learners, questionnaires, researchers' observations by research diaries are the relevant data collection methods that research has qualitative nature. Research findings revealed that although learners had first experience on constructivist approach based course by various activities such as portfolio, group works, etc.; learners had enriched learning and course helps to develop especially team work, communication and logical, critical thinking skills. Portfolio became essential activity to foster learning and skills development of learners.

Key words: Collaborative learning % Constructivist approach % Experiential learning % Portfolio % Transferable skills

INTRODUCTION

Transferable skills are core skills that learners need to develop within their academic life. These skills are essential in their future careers. Both collaborative and experiential learning environments assist in concrete learning and developing abilities on communication, being open to learning new skills, working in a team, solving problems, adapting knowledge to new situation, working with minimum supervision, understanding ethical implications of decisions, questioning, thinking logically, creatively and critically, making analysis, taking responsibility as transferable skills. Constructivist approach to learning is key in this endeavour.

Constructivist approach focuses on ideas as the existence of knowledge only occurs within human who construct their own reality, measurement can be occurs through estimation with observation and dialogue. It aims a rich learning environment that learning environment can be tailored to learners. Constructivist learning environment covers negotiation, task analysis,

developing multiple perspectives, based on three common elements as context, collaboration and construction [1, 2]. As constructivism relies on the concept of a 'learner-centred learning environment,' this concept is used to describe curricula and instructional settings in which learners' learning activities are focused upon; the role of learners is thereby considered an active one [3-6]. The course methodology based on constructivist approach aims to give the learner ownership of the process used to develop solution, encourage testing ideas against alternative views, anchor all learning activities, design an authentic task, support learner in solving problems, provide opportunity to support reflection in content learned and learning process where these can be listed as potential benefits for instructors and learners who engage in experiential, collaborative learning and teaching process [1].

Aim of the study: There are many studies which argue that constructivist approach to learning help the development of transferable skills by experiential and

collaborative learning environments. However, most of these studies are conceptual and there is a dearth of empirical studies investigating how constructivist approach to learning helps learners to develop these skills.

In this respect, the focus of this study is to explore how an “information technology in education” course and program which is based on constructivist approach worked to develop certain transferable skills of undergraduate students. For this study, the research questions below need to be answered.

Q1: How does “information technology in education” course create environment for collaborative learning and experiential learning?

Q2: Which transferable skills are most developing by constructivist approach within the program and course?

Related literature: Constructivist approach provides rich learning environments which provide learners to look beyond their own view through engagement with others, though discussion and collaboration within particular social context. As constructivist approach proposes self-responsibility, reflection, knowledge construction in learning process, a rich learning environment with various collaborative and experiential learning activities enhance learners’ learning and core skills development. Collaborative learning and experiential learning activities, portfolios for reflection help to implement the notions of constructivist approach within course methodology in order to help learners in constructing knowledge and developing their core skills [7, 8]. The following studies emphasized on various learning activities to construct tacit knowledge and develop skills of the learners.

The study of Elen *et al.* [9] support the view that a learner-centred learning environment may take different forms, such as guided discovery, learning through problem solving and curiosity-driven inquiry. In addition to this, their study argued that a student learning environment often replaces a test culture with an assessment culture. The research study suggested addressing the issues of the responsibility of learners for their own education in higher education. Furthermore, Bloxham *et al.* [10] provide arguments on assessment as a learning tool. They paid attention to tacit knowledge as knowledge that is learnt experientially and suggested that teachers in higher education should use participative methods, such as dialogue, observation, practice and

imitation, in order to help learners acquire tacit knowledge. This study is significant because it opens a discussion about the transition of learners into higher education, with an emphasis upon how both the background of learners as well as their prior language experience impacts their transition.

Walker and Finney [11] investigate important aspects of being a successful higher education learner, such as skill development and critical thinking. According to their research results, one of methods most useful to the learners is the development of self-awareness through reflection. The research study investigates the idea that, through the development of skills via a critically reflective approach, critical thinking in its wider sense can be fostered as an ongoing way of being. This is particularly applicable to 'soft' skill areas, such as communication, teamwork, leadership and self-management, all of which are now more frequently developed in undergraduate and postgraduate curricula. The results reveal that the programme was intended to promote the development of critical thinking within groups of learners. The study was put forward to promote an iterative approach as an experiential “learning cycle,” and the results showed the transition from critical thinking or critical reflection to learning and skill development. The programme targeted the development of teamwork, leadership, communication, initiative, flexibility, creativity, project formulation and management, organisational awareness, presentation (written and oral), self-awareness and self-development skills. This study provides a starting point for investigating new programmes in higher education that are based on the principles of constructivism. This study also provides theoretical insight, arguing that the holistic development of both skills and knowledge offers an entry point into autonomous lifelong learning and critical thinking.

Gent *et al.* [12] provide the theoretical base for this research study by considering the development of learners' critical thinking skills about computer science courses. Furthermore, the results indicate that an active engagement between learners and lecturers who are committed to a collaborative approach to teaching, learning and assessment is a key factor in developing critical thinking. Law *et al.* [13] consider what constitutes “good teaching” by considering educational theory as well as the effects of professional commitment and passion in teaching. Good teaching can be done by good teachers who use certain key methods in their teaching, such as concern for and availability to learners, showing enthusiasm and interest, clear organisation and goals,

high-quality feedback on learning, encouragement of learner independence and active learning, appropriate workload and relevant assessment methods and provision of a suitably challenging academic environment. Moreover, Loads [14] investigated how “effective learning advisers” in Scottish higher education institutions perceive their roles in supporting lifelong learning, particularly with regard to academic writing. The report concludes that ELAs see themselves as successfully contributing to the support of lifelong learning. Their role, however, lacks clarity and further investigation is recommended. Significantly, Delucchi [15] also argued, with the support of the empirical evidence, that collaborative learning group strategies effectively teach skills development to undergraduate students. The study of Delucchi [15] is significant because it provides evidence that learners’ quantitative skills actually increase as a result of their collaborative experience. Although assessment of the effectiveness of collaborative learning group techniques is frequently subjectively based and relies on casual comments from learners or faculty, instructors nevertheless continually search for new and effective ways of teaching.

Programme courses provide preliminary knowledge for the field and construct grounds for their further learning. Therefore, it is essential for learners both to experience concrete learning and to apply theory in practice in order to gain and develop transferable skills by field courses. They will thereby be able to transfer basic transferable skills into their workplace once they have graduated [16, 17].

Although recent studies put an emphasis on the outcome of collaborative learning and skills development, there is intensified need to extend knowledge on addressing the researchers’ reflections as instructors and the notion of constructivism in computer information technology courses through experiential and collaborative learning activities. Therefore, this research study aims to investigate the outcome of course methodology based on the notions of constructivist approach in developing learning and transferable skills of the undergraduate students in a Computer and Instructional Technology Teacher Education Program at Education Faculty.

Methods used: The research design of this paper relies on the qualitative research design. The qualitative research design leads to the process of gathering soft, in-depth data from participants who are involved in the research. In qualitative research, writing the research is a full journey,

which is a continuous process for the researcher; all clues can be used as evidence for creating critical comments on the subject [14]. Moreover, qualitative research, with its data analysis, is an ongoing and inductive process [18-20].

The research approach of this paper is the case study through action research that focuses on the documentation of a course methodology of a naturalistic-experiment-in action [21, 22]. The two senior instructors, who based their teaching practices on constructivist approach principles, also became the researchers during one semester in order to observe and to report changes in the learning progress of learners [23]. The researcher observations, through their research diaries, made weekly reports regarding each lecture and the activities of the lab hours.

Self-reports through the portfolio provided enriched evidence to examine the learners’ learning and skills development progress as data collection method. Questionnaire is another data collection method for examining the outcome of the course on developing transferable skills. The questionnaires were used to explore which skills were developed according to core skills for transferring to the future careers. The questionnaire by scaling items and open ended responses was adopted from Bennett *et al.* [24]. In the research study, various data from researcher observations, self-reports and questionnaires provided triangulated data and increased the credibility of the research [18, 20].

Sample: The research was undertaken in one of the North Cyprus Higher Education Institutions. Regarding the political and economic instabilities on such a small island, the education system and the people have been affected by these instabilities in their unwillingness to follow the changes and standards in contemporary education. Also, conducting research and creating voluntarism in research becomes a challenge where learners, the general public and instructors resist change. As researchers are primarily charged with finding solutions to problems and shedding light on how the learning-teaching process can be improved, there is a need to adapt change-oriented actions in education discipline.

In this respect, the research was taken place in Computer and Instructional Technology Teacher Education Program that the program is the new program in Education Faculty and started in the 2006-2007 Academic Year. Although learners have a centralized education, a teacher-centred education experience based on Turkish language education system, the course

provided collaborative learning and experiential learning by group work within classes, lab hours, portfolios and assessment (mid-term, final exams and quizzes) as learning tools.

During the research, fifty-six students participated to the research by course activities. Regarding to protecting confidentiality and anonymity of the participants, the instructors, in their role as researchers, allowed students to withdraw from the research at any time, including during the final stage of the research, the questionnaire. This is why the response rate to the questionnaire is thirty-seven, out of the original fifty-six students. The response rate kept the majority of undergraduates, 66%.

Data analysis: The researcher observations were analyzed based upon content analysis that feature collaborative, experiential learning activities, portfolios, learners' performances and assessments [13]. As observation is a fundamental and highly important method in all qualitative inquiry, it is used to discover complex interactions in natural social setting [18].

The reports of the learners on their reflective practice were evaluated on the basis of content analysis. Self-reports provide a review of documents, since documents and literature are unobtrusive methods that effectively portray the values, experiences and beliefs of participants in their setting.

As the questionnaires typically entailed several questions that had structured response categories and included other questions that were open-ended, researchers attempted to rely on the honesty and accuracy of the participants' responses. Therefore, the questionnaire was used as a data collection method for the qualitative study in order to examine developing transferable skills as core skills. The results of students' responses to questionnaire were evaluated by descriptive frequency analysis.

Findings

Researcher observations by research diaries: During the sole semester of the study, two instructors taught the course, "information technology in education," to two different classes. The first class had eighteen learners; these learners began the program that semester, having no preliminary knowledge of information technology. The second class had thirty-eight learners who had some prior knowledge of information technology. Therefore, there was neither equilibrium between the classes in their number of learners nor in the prior knowledge of their learners. In both cases, the instructors, as researchers,

went to great lengths to control the balance of learning and progress level between the classes, since this is one of the limitations of this research study.

The instructors, as researchers, had the same educational background and teaching experience; the role of the instructor was therefore also controlled for as a variable within the research. During the semester, the instructors acted in collaborative, reflective ways by preparing course materials, quizzes, exams, as well as by setting assessment criteria for each activity together [23, 25].

The two meetings in a week and the research process provided instructors, as researchers, the opportunity to be strategic in each of their actions. During the meetings, researchers reported their observations and correlated their findings about learners' skills and learning progress. According to the agreement on researchers' observation, learners had a willingness to gain theoretical knowledge based on research and group work in the lecture hours. Furthermore, the learners showed enthusiasm to participate in group work and discussions. The group work and discussions became enjoyable, helpful activities for learners, helping them to develop communication and negotiation skills in English. Although most of the learners had volunteered to participate in group work and discussions, some of the learners resisted participating in these activities and complained about them. Therefore, the performance and observable attitudes of the majority in classes provided evidence that group discussions and group work after one hour of lecturing enhanced collaborative learning and enriched the concrete learning experiences of the learners by developing communication, negotiation and team work skills. The most observable behaviour that the learners reported was that they overcame their anxiety of speaking English. Additionally, they involved themselves in discussions in order to develop language skills.

In addition to this, two hour lab sessions each week provided learners the opportunity to link theory with practices that are based on experiential learning. Informal conversations with groups of learners as well as observations indicate that learners had enthusiasm to learn practical knowledge when they have a firm belief that practical knowledge is the most important part of the learning for their future careers. Thereby, they involved themselves in experiential learning; in other words, the learners developed the ability to search for new information, to think and analyze critically and to bridge theory with practice.

At the beginning of the course, learners came across something that was new to them, a portfolio. Learners did not know what a portfolio is; in fact, learners could not even pronounce the word “portfolio.” The instructors, as researchers, led the learners to think about their learning and to reflect on their learning process so that they would be able to prepare portfolios that would be based upon concrete learning activities and skills. The most observable attitudes of the learners deriving from the portfolio activity were that learners were motivated to write about themselves in terms of their developing skills and concrete learning experiences. This activity became enjoyable and interesting; it also provided the learners with curiosity about each week’s activities. By developing their portfolios, learners developed their reflective thinking skills, critical thinking skills, questioning skills and enriched their concrete learning experiences. Additionally, learners were involved in an individualistic learning process and developed an ability to evaluate their own learning.

During the semester, learners took a mid-term exam, quizzes and a final exam; these functioned as the major assessment tools. Instructors attempted to use the assessments as learning tools, allowing learners to review mid-term exam papers and prepare reports on their misunderstanding and mistakes. In this way, learners gained knowledge and critically analyzed their learning. Additionally, instructors offered five quizzes, with each of the quizzes including one point where the learners decided on the date and the chapters covered by the quiz. Thereby, learners were given the ability to negotiate, had to respect others’ views, consider multiple perspectives and find solutions in the context of a democratic classroom atmosphere.

During the research process, researchers, as instructors, also gained insights from teaching practices done in a collaborative learning environment and collegial activities that instructors enhanced their reflectivity in their professional field and teaching practice [26].

Self-reports of learners through portfolios: The fifty-six students reported their thoughts, feelings and experiences on the course activities during the semester by self-report. Students submitted self-report with their portfolios. Although learners reported that collaborative activities in classes, field trips, lab hours, assessment enhanced their concrete learning and increased their awareness of life long learning; learners strongly indicated that the portfolios helped them reflect critically on learning and to

evaluate their learning experiences and skills development processes.

The learners reported that they had high expectations for the course and the instructor since it is the core course within the faculty. In addition to this, learners reported that they believed in the necessity of the core course because of its efforts to enhance their concrete experiences for their future learning. The initial thoughts and expectations of the learners are reported below:

“In the first course, the teacher asked what we expected from the course. Also, we had informal conversations within the class to know more about each other”

“I believe that I will learn everything about computer information technology through this program’s courses”

“In this lesson, I believe we can learn everything because we have enough information”

“We have to learn everything and we should be perfect when we graduate from this university as experts”

“I want to work with a teacher who is good, funny, friendly, expert and talkative”.

Furthermore, learners reported that developing their portfolios gave them the opportunity to construct knowledge, to develop research skills and to contribute personal insights into their learning. The thoughts and experiences of the learners are indicated below.

“Lab hours are very useful to better understand theoretical knowledge and apply it in practice”

“We discussed our midterm exam questions and we reviewed and solved the problems together with the instructor during office hours”

“We went to the computer centre. We learned a lot of information about computers and we learned the duties of the responsible people within the computer centre, such as network managers, programmers, etc.”

“The computer centre trip was very helpful and enjoyable”

“We learned to use Powerpoint. This program helps us structure, design, present information”

“We use communication effectively in the class, conducted research and found the relevant information that we need”

“The teacher discussed our mistakes and immediately corrected us while we discussed the concepts in class”

“The instructor gave advice about our learning process”

“Computer hardware is also important for computer users; it is essential for us”

“I think the portfolio task was very useful for me. It provided studying daily when most of us did not do daily studying”

“I gained abilities while preparing the portfolio such as writing skills and critical thinking skills”

“We found relevant information through research for discussions within the class”

“I learned a lot of things with the portfolio”

“I can do summaries for the quiz and then exam through the portfolio”

“I learn to work in a team, make decisions, solve problems and communicate in writing”

“Our research helped me learn a lot of things”

“I can work in a team and communicate with others in class”

“I gained research skills and I learned to use the internet very effectively”

“I gained discipline when I prepared a task”

“I learned to use time very effectively”

“Conducting research is the best way to learn”

“I gained techniques for preparing a report on time”

The learners reported that course activities and instructors helped them enrich their learning process. The

process of learning by course activities helped learners gain transferable skills that the learners will carry to the future learning and career. The learners indicated their opinions concerning the outcome of the course in developing their transferable skills as given below.

“Transferable skills are best developed through technology courses. This course is important for skills development”

“I work better in a team. I improve my skills through technology courses”

“I think you provided different activities in the lesson and we also had discussions in the class to learn better”

“If someone follows technology, she/he can be a contemporary person”

“I think that our lesson was not difficult because we are a group of learners who work as a team to learn”

“You are a good teacher because you are interested in us”

“Technology is a part of my life. Thanks for all of your efforts”

“The course is important for the future”

“Some mature people say that millennium babies are so clever because of technology. We can learn all knowledge and skills through technology”

“The course contributed to improving myself”

Although, most of the learners reported that the course both helped them to learn and provided them with concrete experiences based on reflective practice, some of the learners expressed that did not think that the course activities were useful for learning and skills development. The reports of the learners indicate that some of the learners felt difficulty in collaborating with others, being punctual or in searching for alternative resources. The culture of the context and the impact of education system are the critical factors that challenge attempts to change. The below examples demonstrate the reality that some of the learners resisted involvement in course activities and some of them were involved with

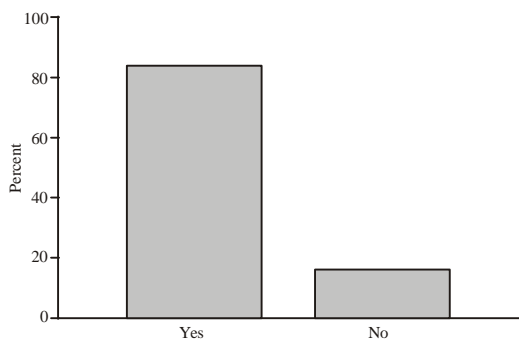
activities that they reported the adaptation problems within the course.

“I did not do any homework and activities because I believe that exams show real performance”

“According to me, everything is good but sometimes I cannot understand anything. I believe that if I want, I can learn everything”

Questionnaire: The questionnaire consists two parts such as demographic information, the effect of technology and course in particular skills based on scaling items and open-ended question response. According to demographic information, 45.9% (17) of the undergraduates who responded to the questionnaire are female and 54.1% (20) learners are male. In the range of the ages of the undergraduate students, it can be seen that 54.1% (20) of them were in the 18-20 age range, 37.8% (14) of them were in the 21-23 age range and 8.1% (3) of them were in the 24-26 age range. The findings revealed that most of the learners started their undergraduate degree after completing high school.

Thirty-one students, 83.3%, responded that the course helped them to develop transferable skills. On the other hand, six learners, 16.2%, responded that the course did not develop their transferable skills. The bar graph represents the response of the learners to the question: “Do you believe that your transferable skills as listed were developed by the course?” Although responses have missing values and not all participants responded to the questionnaire, research findings about open ended question has shown that learners developed their transferable skills through the course based on constructivist approach.



Do you believe that your generic skills as listed are developed

The effect of the course and its activities on developing particular skills demonstrated that the course and its activities are essential and useful for enhancing particular oral and written communication skills, as well as for learning new skills and procedures, working in a team, making decisions, solving problems, adapting knowledge to new situations, working with minimum supervision, understanding ethics and social/cultural implications of decisions, questioning accepted wisdom, being open to new ideas and possibilities, thinking and reasoning logically, thinking creatively, analyzing, making mature judgements and taking responsibility in moral and social and practical matters skills.

Although the majority of the learners indicated that the course and its activities were “essential” and “useful” for developing particular skills, 57.6% (19) of the learners indicated that the course was “essential” for developing their ability to *make mature judgements and take responsibility in moral, social and practical matters*. In particular, 52.8% (19) of the learners responded that the course was “useful” for developing the ability to *work with minimum supervision*. In addition to that ability, by the same percentage and frequency, learners indicated that course was “essential” in developing the ability to *analyze*. Moreover, 54.3% (19) of the learners indicated that the course and its activities were “useful” in developing the ability to *be open to new ideas and possibilities*. Furthermore, 50.0% (18) of the learners responded that the course and its activities were “essential” for developing the abilities to *solve problems* and to *learn new skills and procedures*. With the same percentage and frequency, learners indicated that course and its activities were “useful” in developing the ability to *question accepted wisdom*. In developing the ability to *communicate in writing and think creatively*, 41.7% (15) of the learners responded that the course and its activities were “essential.” With the same percentage and frequency, learners indicated that the course and its activities were “useful” to *adapt knowledge to new situations*. Additionally, 48.6% (18) of the learners indicated that the course and its activities were “useful” in developing the ability to *work in a team*. 44.4% (16) of the learners indicated that the course and its activities were also “useful” in developing the ability to *think and reason logically*. 35.1% (13) of the learners indicated that the course was essential in developing the ability to *understand ethics and the social/cultural implications of decisions*. In particular, 43.2% (16) of the undergraduate learners indicated that the course and its activities were “essential,” while at the same time 45.9% (17) of the

learners indicated that course and its activities were “useful” in developing the ability to *communicate orally*. With a 43.2% (16) response of the learners, it is seemed that the course and its activities were “useful” in developing the ability to *make decisions*.

According to the findings, most of the learners responded that the course and its activities, through the ideas of a constructivist approach, helped them to develop particular core skills as transferable skills.

DISCUSSIONS

In learning and teaching atmospheres, self-discipline and self-management of learners has become vital for learners [27]. In light of this research study, it is clear both that technology and related courses have a great impact on developing transferable skills of learners and also that there is a relationship between being an active learner and having the discipline to learn.

Each sector of education, such as schools, vocational and training units, has a role to play in helping people develop their transferable skills. Skills are developed throughout one’s life and education context processes. Transferable skills are very important for learners because jobs and education contexts today require flexibility, initiative and the ability to undertake many different tasks. They are not as narrowly prescribed and defined as in the past. Additionally, they are generally more service-oriented, thus making information and social skills increasingly important. People should become involved in communication and negotiation within team atmospheres in order to lead tasks, be successful and learn from others collaboratively. In general, according to the scope of definitions of key skills, people should have lists of skills in order to adapt to the new changes of the world and to cope with tasks in successful ways. These skills can be listed as: communication, use of information technology, working with others, improving one’s own performance, problem solving, degree of responsibility, adaptability and being a life-long learner [10, 27, 28].

Many universities have begun to pay particular attention to articulating sets of transferable skills as desirable characteristics of their graduates. This research study examines the impact of technology course based on constructivist approach in developing the abilities on communication, learning new skills, working in a team, solving problems, adapting knowledge to new situation, working with minimum supervision, understanding ethical implications of decisions, questioning, thinking

logically, creatively and critically, making analysis, taking responsibility as transferable skills [7, 8].

CONCLUSION

This research study therefore has contributed to the understanding of how the transferable skills in learners can be developed by using ideas of constructivist approach within computer information technology program. This study empowered that using collaborative and experiential learning environments enrich learning and develop transferable skills of undergraduate students. There are factors, however, which limit the outcome of this research study. The cultural, educational background of the learners who experience the ideas of constructivist approach for the first time and having difficulty with using English language in program courses can be seen as the limitations of this study. These challenges created questions to be answered by further studies. Such further studies should focus on the time when learners come to the last year in their program by using comparative analysis and conducting comparative studies by other learners who have different cultural backgrounds.

As the Computer and Instructional Technology Teacher Education program is new and learners who participated in the study were the first students in the program, the mode of the program needs to rely on theory and practice together to provide learners with the opportunity to gain both theoretical and practical knowledge and to gain transferable skills for their future careers. It is therefore essential to consider the preparation of learners as life-long learners for their future professional lives and to put an emphasis on the process of education rather than on the product of education. Therefore, using different learning tasks and events empowers this perspective in order to make learners construct knowledge by their own interpretations and by through active involvement. In this regard, this study is significant in that it contributes new understandings to the learning and teaching process of learners within the program in order to reshape the pedagogical policy of the program and to provide a guide to colleagues in enhancing their teaching practice by through eclectic perspectives.

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