Blended Learning Based on Creative Approach: Enhancing The Mutual Impact of Creativity, Intrinsic Motivation and Achievement in Academic Camputer Courses.

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Abstract:

Information and communication technology (ICT) has become the essential part of the university course aims. The rapid speed of technical development, growth of information, and knowledge, gives the attention of the higher education to improve their teaching methods in a creative way. One of the educational innovative ways that gain support in learning methods is called blended learning. The blended learning approach is a mix of e-learning technology with conventional teaching methods to get the advantage of the both methods. The research is trying to apply the blended learning based on creative approach in order to enhance the mutual impact of creativity, intrinsic motivation and achievement in academic computer courses. Existing research has emphasized on the applications of distinctive characteristics of creative teaching strategies in the particular domain of blinded learning applications for academic computer courses. High successful management of creative approach in blended -learning application's task gives learners a sufficient creative knowledge and performance in academic computer courses. So this research aims to decide on what the extent of applying blended learning based creative approach effects on the level of creativity, motivation, and achievement in the academic computer courses. The subject participants consist of 57 undergraduate students. They all enrolled in the academic computer course. The intrinsic motivation questionnaire, Torrance creativity test, achievement test, and rubric evaluation tool to evaluate the creativity of the final computer program product have been conducted. The whole sample was drawn randomly from the faculty of medicine- foundation year –Taif University in Saudi Arabia. A creative blended learning applications have been constructed to teach the students how to design computer program, the creative blended learning applications aim to build up student creative performance to build up the computer program in their profession.According to the findings blended learning applications based on creative approach have a positive effect on the learners' creative performance on computer programming. Furthermore there is a mutual relationship between creativity, intrinsic motivation and achievement in favor of creativity in computer programming.

Key words: Blended learning , learning environment , Creativity, Intrinsic Motivation, computer creative performance , E-learning applications , E-learning creative approach, Rubric evaluation.

1. Introduction:

We live in an innovative age, which is distinguished by rapid changes in information technology and constantly changes in many aspects of presenting life. Educators in higher education have faced challenges more than ever before, so they should be more flexible within the rapid surroundings changes in information technology. Also this requires students to enhance their thinking skills, creativity, and intrinsic motivation to deal with the rapid changes in information technology. Consequently The University's strategic core should set up itself as a prime in promoting their student's creativity and innovation. This ambitious aim can be achieved by improving teaching and assessment methods by applying blended learning technology in their academic courses. Creativity is important to improving our learning methods. The current period needs learners who can combine their knowledge skills with creative ability in adventurous ways in order to face all complex aspects of new technology. Creativity is an important approach to higher-education student's development (Heerwagen, 2000) (Acummings, 1996), (Findly & Charles, 1988). Blended learning as a new technique combines classroom interaction with e-learning technology methods. It can make a mix between the benefits of both face-to-face interaction with online technology methods. Blended learning refers to a redesign of the instructional model by changing from teacher-centered to student-centered instruction in a classroom to be more active. Also increase student-instructor, student-student, and student-content and student-outside resource interactions in a creative way. Moreover, it integrates formative and summative e- assessment for students and instructors. This distinctiveness makes blended learning very successful. It has been established that the use of blended learning could effectively improve student's critical-thinking skills, personal learning efficacy, and professional knowledge of critical-thinking in a creative way.

2. Terms:

2.1. Creativity: (Ambile, 2000) The ability to re-define, re-create, re-produce things, by firstly, questioning them, then by looking at them through different angle or perspective, and finally formulating or reproducing a renewed one.

2.2. Innovation: (Cardinal, 2001) The ability to come up with new ways of thinking and doing things, that are out of the ordinary and require imagination with emphasizing on a larger organization perspective and add value to the organization's products and services.

2.3. Creative person: (Hopson, Simms, & Knezek, 2002)The individual who amazing in his ability to adopt different situations and to manage with whatever is needed to reach his goals.

2.4. Intrinsic motivation: (Deci & Ryam, 1985) The individual desires to perform a task for its own interior sake and more interested, flexibility and risk taking.

2.5. Blended learning: It is a method to integrate internet technology such as areas of chatting, sharing files, inviting members, and using websites with the most characteristic of face to face learning experiences to enhance the interaction between students and teacher with using the best successful blended learning methods.

2.6. Computer programming based on creative approach: Means creating a computer program in a distinctive way by encouraging learners to generate new ideas, producing a computer program in a different way, recreation of program ideas that may have done before but in a different way. Create different ideas and situations in order to solve problems, moreover the ability to evaluate their ideas in a creative way and make a good decision about their doings.

3. Research framework:

Creativity means originality, individuality, imagination, generates a new idea, making ideas that no one has done before, or making ideas that have been done before but in dissimilar ways (Jackson, 2004). Therefore Creativity is an important outcome in higher education particularly in academic computer courses. But it is still has an insufficient concern in teaching methods, rather than poor planning for creativity in classrooms. The higher educational institutes give insignificant attention to student's creativity or intrinsic motivation in their learning style. Creativity and motivation are important value in learning outcomes but they haven't got any consideration or concern especially as an approach of successful blended learning applications or in face to face classrooms. Most of universities perfectly recognized that creativity is not present is their academic courses, mainly on blended learning applications. The teaching and learning process with all its complexity need embedded creativity in all the professional acts especially in blended learning courses. So this research aims to investigate the effectiveness of Blended learning based on a creative approach to enhancing the mutual impact of creativity, intrinsic motivation and achievement in academic computer courses to promote student's creative performance in Taif University- Saudi Arabia.

4. Research questions:

4.1. What is the effectiveness of creative blended learning approach on creative performance of computer programming construction?

4.2. What is the relationship between creative blended learning approach, creativity, intrinsic motivation, and achievement?

4.3. What is the relationship between fluency, flexibility, originality and details as factors of creativity on the creative performance of computer programming?

4.4. What is the regression between independent variables (creativity, intrinsic motivation and achievement) with the dependent variable (creative blended learning approach)?

5. The research aims:

5.1. Find the effectiveness of blended learning based creativity approach in creative performance of academic computer programs and its relation to intrinsic motivation.

5.2. Give the attention to creativity and intrinsic motivation in the development of blended learning based creativity approach.

5.3. Discover to what extent creativity can be affect on successful management of blended learning based creativity approach.

6. Research hypotheses :

6.1. There is no significant difference in the level (0.05) between creativity, intrinsic motivation, and the achievement in blended learning based creativity approach on students' creative performance.

6.2. There is no significant difference in the level (0.05) towards the relationship between fluency, flexibility, originality and details as a factor of creativity on students' creative performance.

6.3. There is no significant difference in the level (0.05) between independent variables (creativity, intrinsic motivation and achievement) with the dependent variable (blended learning based creativity approach) on students' computer programming creative performance.

7.   Background:

 What does creativity mean?

Creativity is involved in cognitive processes, but it is different for everyone. There is still evidence that some people are consistently more creative than others and that people differ in their creative outputs over the time (Dacey & Kathleen, 1998). Thus there are individual differences that influence on creativity learner rather than others. These differences are related to many factors, including personality, experience, interests, and knowledge.Creative learners have several features that distinguish them from their less creative peers, they have a rich relevant knowledge and well-developed skills, and furthermore they find their work intrinsically motivating (Simonton, 2000) (Amabile t. , 1998). They tend to be independent, unconventional, and more risk-taking, in addition to having wide interests and a greater openness to new experiences (Sternberg, 1988) found several additional characteristics such as the differences and similarities recognitions, making connections, flexibility to change directions, and willingness to question norms and assumptions. Creative learners also tend to have a discovery orientation, which leads them to view situations from multiple perceptions, find problems, and ask novel questions (Csikszent, 1988) In work contexts, creative people also tend to take the initiative, work effectively in teams, and have extensive networks (Kelly & Janet, 1997).

7.1.   The features associated with creative learner:

7.1.1. Be imaginative: Generating new ideas, thinking out of the boxes we normally inhabit, looking beyond the obvious, seeing the world in different ways so that it can be explored better.

7.1.2. Be original: This embodies the quality of newness like inventing and producing new things or doing things no one has done before.

7.1.3. Being inventive with someone else's ideas or products: Recreation, reconstruction, and redefinition have been done before but in different performance.

7.1.4. Being curious and having an inquiring disposition: Willing to explore experiment and take risks like the attitude and motivation to engage in exploration and the ability to search purposefully inappropriate ways in order to find and discover.

7.1.5. Be resourceful: Using knowledge, capability, relationships, and powers persuade and influence, also use physical resources to overcome whatever challenge.

7.1.6. Being able to combine: Connect synthesis complex and incomplete data, situations, ideas, and contexts in order see the world freshly differently to understand it better and solve problems.

7.1.7. Being able to think critically and analytically: Generate lots of ideas and we also have to be able to evaluate them in order to distinguish useful ideas from those that are not useful and make good decisions about how to act.

7.1.8. Being able to represent ideas and communicate them to others: Present the ideas and show people possibilities, opportunities and solutions in ways that make sense to them.

7.2.   Creativity by psychological point of view:

The cognitive processes that generate creative outcomes do not differ from everyday thinking what differs is the context   in which the creative ideas occur, usefulness of the ideas, and there are two keys of cognitive processes are involved in creative problem solving (combinations and transformation) (Buchanan, 2000).

7.2.1. Combinatorial: Produce novel combinations out of familiar ideas or things through generating idea.

7.2.2. Transformational: Use logical reasoning to transfer concepts from one domain to another. (Oldham, 1997) imminent and analytic thinking is associated with an adaptive problem-solving style, while divergent thinking is associated with an innovative problem-solving style. Another important cognitive component of creativity is the ability to use different mental models, Shifting mental models means being able to shift from one understanding of a concept to a new and different perspective (Chi, 1997) (Dacey & Kathleen, 1998).

7.3.   Intrinsic motivation:

Intrinsic motivation is characterized by the individual's desire to perform a task for its own sake, (Deci & Ryam, 1985), (Sansone & Harackiewiez, 1998) (Utman, 1997). It has been argued that intrinsic motivation not only increases effort but also influences other aspects of the person's behavior, Intrinsically motivated individuals are supposed to be more interested, cognitively flexible, risk taking, and persistent in the face of barriers and these characteristics are considered main qualifications of creativity (Amabile, Conti, coon, Lazenby, & Herron, 1996) (Utman, 1997) (Zhou & Shalley, 2003) . In contrast, when students are only extrinsically motivated this may lead to rigid and cautious behavior instead of experimentation and deviation from established new ideas.

(Cardinal, 2001), And (Amabile t. , 1998) Emphasized on intrinsic motivation for creative tasks. It makes the difference of what an individual can do and what one will do. According to Amiable a high degree of intrinsic motivation for the task can even to some extent make up for deficiencies in relevant skills, while the lack of intrinsic motivation cannot be compensated by any level of relevant skills. So the High level of creativity requires deep involvement in the activity at hand. (Shalley, 1995) He argues that when the individuals are intrinsically involved in their work, all their attention and effort should be focused on their jobs. Making them more persistent, and more likely to consider different alternatives, which should lead to higher levels of creativity. In creative works the involved participants must define a problem, gather information, and gradually refine and extend initial ideas to achieve successful implementation (Collins & Amabile, 1999). Hence, a relatively high level of intrinsic motivation is required. On the other hand, students doing creative work are held to enjoy the creative process itself. (Caves, 2000) Jobs that are designed to be complex and demanding a higher level of creative work are expected to foster higher levels of intrinsic task motivation.

7.4. The relation between Intrinsic Motivations and creativity:

One of the most major hypotheses about individual level creativity is that a rigid link exists between creativity and intrinsic motivation. It is believed that individuals engaging in tasks for which they have inherent interest are more likely to engage in it as a creative individual. However, most of the research testing the intrinsic motivation and tested the effects of extrinsic motivation on creativity. (Deci & Ryam, 1985) Conducted a new study in this area shows that intrinsic interest in a task was decreased when financial rewards were introduced to the task. (Amabile t. , 1985) Found that subjects just primed with extrinsic motivation. The person has an intrinsic interest in their work, without the concern for extrinsic rewards, perhaps leading to higher creativity. It is predicted that intrinsic and extrinsic motivation is distinct motivations and that both effects on creativity. It is posited that individuals who are most focused on the intrinsic aspects of their work will be more creative than those who are not, while individuals who are very concerned with the extrinsic aspects of their work will be less creative than those who are not.

7.5. Blended learning based creativity approach:

Existing research has emphasized on the applications of distinctive uniqueness of creative teaching strategies in the particular domain of blinded learning applications in academic computer courses. High successful management of creativity in blended -learning application's task gives learners a sufficient creative knowledge and skills of creativity in academic computer courses. So this research aims to decide on what the extent of developing the creative approach in blended learning program effect on creativity and intrinsic motivation of academic computer courses. This research claims that the conventional method of classroom teaching should be changed to blended learning by using the technology in teaching to such supports creativity and motivation. The use of technological tools depends on creativity approach is the greatest challenge in learning methods. The research also needs to consider how the appropriate method of creativity can be applied to improve creativity and intrinsic motivation in computer programming.In the future, all academic institutes and other professionals will need to meet their demands by applying creative technology methods in teaching. So in the future we need to hold all the necessary knowledge in a creative blended learning way (Petro Poutanen, 2011).

8. Prior studies:

 (Loveless, Turvey, & Burton, 2006) Design a project that has played a challenging role in the evaluation and development of pedagogy for creativity with digital technologies in teacher education. The findings indicate that student teachers can develop substantial understandings of creativity as complex and interactive when they engage with creative practices at their own level, and are given opportunities for open-ended planning, and permitting for flexibility, risk taking, practice, support and reflection. (Hopson, Simms, & Knezek, 2002) Conducted study has been added to the limited research on the use of computers to enhance the student development of higher-order thinking skills. It provides data that may be used to create a new paradigm for classroom organization and structure. The results will also be useful for educators who are formulating long-range technology plans. The creation of a technology-enriched classroom environment appears to brave had a minimal but positive effect on student acquisition of higher-order thinking skills. (Sharma, 2006) conduct study attempted to identify different levels of Creativity, Achievement Motivation, Self Concept, Index of Brightness and adjustment among adolescents, studying the contribution of Creativity, Achievement Motivation, Self Concept, Index of Brightness and adjustment study the interaction between Creativity, Achievement and Motivation (Akira & Takashi, 2000). The purpose of this study was to examine the causal relationships between children's use of computers, creativity, and motivation for learning. The authors conducted a panel study of 259 male elementary school students, measuring frequency of computer use, creativity, and motivation for learning at two different times (October 1989 and February 1990), and analyzing the panel data using a cross-lagged model. The results did not reveal that children's experience in word processing or programming with computers

enhanced their creativity or motivation for learning. (Ambile, 2000) built on existing research on creativity to carve out two main characteristics of creative work, (1) the specifically high importance of intrinsic work motivation and (2) the particularly low programmability of tasks. Both characteristics are at the same time important factors determining control system choice. (Shalley, 1995). (Subotnik, et al., 2000) Offer an inter cultural discussion of several issues that are related to two guiding questions: How can we as an educator helps to motivate the development of creativity in mathematics and science? Conversely, how can we use activities of creativity to develop motivation in these fields? Among the topics of our conversations are relationships among extrinsic and intrinsic motivation. A report of(King, 1995) is presented on a 2-year collaborative research project to encourage creativity and organizational implications by Roffey Park Management Institute and partners. The first findings recommended that effective managers of creative groups are clever team builders and amazing leaders. (Kylie A. Peppler, 2011) This study calls our attention to the ways that creativity is a cultural endeavor, shaped and persisted through the actions and values of many people. The creation of Web 2.0 capabilities – embodied in gaming environments, Facebook and YouTube, among others – is moving greater areas of the internet beyond transmission-only spaces and into dynamic environments that thrive on the thought dealings and assistance of a community of participants. (Workman, 2011) discussed three case studies reflecting areas of innovation and creativity which CETL funding made potential through a work-based learning CETL. Three case studies are used, the first describing progression from a Performing Arts Diploma to a degree, facilitated by the use of learning technologies and social networking; the second considers the impact upon experience professionals and stakeholders involved in a new Doctorate programmed by Public Works. The third case study demonstrates the importance of rewarding investment in the evaluation of learning approaches, assisted by learning technology.

9. Participants:

The subject participants consist of 57 undergraduate students, they all enrolled in academic computer courses, the intrinsic motivation questionnaire, Torrance creativity test, achievement exam, and rubric evaluation tool to evaluate the creativity of the final computer program based on blinded learning with creativity approach are conducted. The whole sample was drawn randomly from the faculty of medicine- foundation year –Taif University in Saudi Arabia.

10. Instruments and materials:

10.1.1. Torrance tests of creative thinking: (appendex1) The Torrance test of creative thinking (TTCT) were first published in 1966, and it has been modified until 1998, there are two forms (A-B) of the (TTCT) verbal, and two forms (A-B) of the (TTCT). The study has applied the two figure forms (A) & (B). Model (A) contains three figural activities (picture construction, picture completion, and parallel lines) and model (B) contains three figural activities (picture creation, line completion, and circles). The Torrance test of creative thinking (TTCT) provides measures of four creative thinking aspects (fluency, flexibility, originality, & details). The study applied the TTCT Correction key to calculate the four aspects of creativity with standard evaluation and scoring procedure.

10.1.2. Intrinsic motivation questionnaire: (appendex2) This questionnaire has been done by Abed Elfatah Mussa which contains 28 items in the form of multiple choice questions and each question contain five choices.

10.1.3. Achievement test: (appendex3) An achievement test consists of 50 multiple questions have been conducted for participants to measure the knowledge related to computer programming. A test of stability and validation has been done for the achievement test to be confidential.

10.1.4. Rubric for student learning & creativity :(appendex4) A rubric measurement tool has been done to measure the level of creativity in a computer program for the two programs that students have been created. The rubric consists of four dimensions, with four scales with its description.

11. Experimental design and procedure:

11.1.1. For the purpose of this study, the researcher selected a random sample of participants from a college of medicine- Taif University, which consist of 57 of undergraduate female students.

11.1.2. A suggested creative strategic approach to encouraging Creativity in academic computer programs

A creative blinded learning application has been constructed to teach the students how to create a computer program. The creative blinded learning applications aim to build up student creative performance in designing computer programs, besides building up their knowledge in programming. The blinded learning creative training applications were conducted over a 12 week period. The researcher met with each student individually to introduce the rationale, the activities and the procedures for implementing blinded learning applications (Jackson, 2004):. The blended learning applications intensives on creative activities include:

- Role playing and seminar presentation by blended learning applications.

- Practice and skills to ensure a successful outcome and encourage creativity by blended learning.
- Collaborative learning by engaging students as active participants with blended learning applications.
- Opportunity for discussions and scope for negotiation of the task by blended learning applications.
- Encouraging the reflection of their tasks through electronic ways. The students should know what reflection means, and provide a structure to assess the reflective process, Self-evaluation forms, process reports and opportunities to comment on the feedback.
- Varied assessment tasks to encourage students to consider different approaches
- Support self, peer, and collaborative assessment through blended learning, the extent and purpose of self, peers, and collaborative assessment: (Heywood, 2000) notes that the assessment is a multidimensional process of judging the individual in action. Ultimately, we want students to be able to evaluate their own work in a critically-informed manner. Students are constantly evaluating their own progress and passing informal comment on the work of their peers.
- Problem-based learning, Students need to be involved as active participants in the learning process, encouraged to engage in questioning, discussion and arguing, the focus is on teaching for understanding rather than remembering.
- Encouraging novelty approaches to responsibilities: this might involve students in role-playing in delivering a seminar presentation.
- Encouraging students to engage with the methodologies, practices and skills that are more likely to ensure a successful outcome and encourage creativity.
- Collaborative learning engages students as active participants in that they are placed in situations in which they have to explain what and why they are doing. In group-learning situations students are working with others whose learning experiences are probably different.
- Opportunities for discussion with elements of the curriculum it should contain the scope for negotiation of the tasks, their timing and weighting, the assessment criteria, and the marks awarded, we should permit students to opt out of renegotiate certain coursework tasks (Elton, 2005).
- Encouraging (student) risk-taking within a safe environment, This is best supported within modules where assessment focuses on process rather than outcome

11.1.3. Blended learning strategies for improving creative performance in computer programming:

This case study consists of experiences, observations, collected course feedback and documented online materials in computer programming. The experiences, observations and feedback from the computer course were first discussed among the academic concerned. Then the experiences from the course were further reflected on by investigating the online content of the course. As a part of the requirements of the course, the participants were asked to reflect on their own learning processes within the groups and provide an account of their work process. These reflections were shared by the both ways face to face and online learning social communication through the following actions:

- The facilitator informs the participants about the general matters, schedules, goals and Provide content from face-to-face meetings, such as learning materials, photos, videos in conventional methods
- The facilitator starts conversations and gives a general description of the goals and what is expected from the participants.
- The facilitator asks participants to provide some information about their continuing work comment and give feedback on presenting works.
- The facilitator provides a way to permit all participants to see what others are doing thus providing the possibility for learning from the others' practices and experiences.
- The Facilitator follows participants working process and to recognize a need for possible interventions and convenient way to inform and remind participants about general issues, schedules by both methods face to face interaction and online communication.
- Also the facilitator uses the applications of others online tools to support blended learning such as:
- Facebook was chosen as a mid synchronization stage because it has a diffusive usage tool among students. During the planning phase before the course.
- E-mail was used for informing students about rapid changes and notifications concerning the course.
- On-site meetings were an essential part of the course's practical approach, The participating learns together by site facilities and practical problems solving to address the course goals.
- Collaborative online manuscript editor. It was used by some of the student work group for producing reports and recording discussions.
- Using Prezi as a presentation editor that provides a spontaneous presentation mode. During the on-site meetings Prezi was also used as a mind tool to facilitate collaboration.
- Slide share was also used as an easy way for sharing PowerPoint slides through the browser.
- Drop box provides an easy way to share course files. It was used with other e-forms to share files.

- The participants summarized their findings from the course in the course blog. One of the guiding principles was to share information widely and collect feedback for it.

11.1.4. After finishing the blinded learning creative applications the achievement test was conducted within 80 minutes, the correction is according to the key answer prepared by the researcher.

11.1.5. The Torrance figural test has been applied on students to examine the creativity level of the students in four creativity factors (fluency, flexibility, originality and details) the participants' responses has checked according to Torrance formal answer instructions.

11.1.6. After that, the Questionnaire measures the intrinsic motivations had been applied to the students and the answers have been checked according to the answer key form.

11.1.7. After the blinded learning strategy methods have been conducted, all the participants asked to create two-computer programs in their professional's to measure the creative performance in computer programming, the two programs have been checked according to creativity in the program rubric.

11.1.8. Statistical analysis was done after all the experiment tools have been finished with the findings discussion related to the research question.

12. Data analysis and discussion:

The statistical package for social science (SPSS17) have been used for the raw data to estimate the descriptive analysis, analysis of variance, analysis of linear regression, and multi regression, to address the research questions.

12.1. Descriptive statistics for independent and independent variables:

Table 1. Descriptive statistics for independent and independent variables

Variables	Means	Sample number	Std. Deviation
Creativity	119.14	57	60.90
Motivation	54.26	57	24.01
Achievement	92.47	57	3.73
Computer Program A	88.42	57	6.27
Computer Program B	86.49	57	5.97

The Table1. Shows the descriptive statistical analysis of the variables by presenting the mean of the three independent variables (Creative, motivation, and achievement) with the dependent variable for the creative performance of computer programming A&B. So we notice from the previous table that there is a great variety within the creativity values due to the great value of standard deviation which equal to (60.9). But the achievement doesn't have a great difference according to the standard deviation value (3.73). Also for the creative performance of computer programming the value of standard deviation is (6.27), the mean of creativity of the participants is (119.14) with (60.90) standard deviation. In addition the motivation mean is (54.26) with (24.01) standard deviation. On the other hand the cognitive achievement shows the mean value is (92.47) and (3.73) for the standard deviation. Furthermore the mean for program A is (88.42) and for program B is (86.49) with standard deviation (6.27) for program A and (5.97) for program B. We can notic that the STD for the creativity has a greater difference than the other variables. On the other side the creative performance for program A and B are too close to the value of the mean and standard deviation which indicates that the participants have the same creative performance in computer programming.

Table2. Correlation and t-test analysis between variables

Variables	Sample number	Means	Std. Dev.	Correlation	sig	T-test	df	sig
Motivation - program A	57	-34.15	24.57	. 04	. 76	-10.49	56	. 000
Motivation - program B	57	-32.22	24.58	. 028	. 83	-9.89	56	. 000
Motivation - achievement	57	-38.21	23.95	. 094	. 48	-12.04	56	. 000
Motivation - creative	57	-64.87	64.55	. 04	. 76	-7.58	56	. 000
Creativity – program A	57	30.71	59.74	. 23	. 07	3.88	56	. 000
Creativity – program B	57	32.64	60.83	. 06	. 65	4.05	56	. 000
Program A – program B	57	1.92	6.73	. 39	.002	2.16	56	. 035

We can see from Table 2. That the correlation between the participant's creative performance of program A and motivation is (.04) While the t-test gives significant differences, also for creative performance of program B.

This means that   there is a significant relation between motivation and creative performance of computer programming. So it gives us indication that the intrinsic motivation affects on the creative performance of computer programming in a positive way. On the other hand, when we look at the relationship between intrinsic motivations and the achievement we find that there is a significant difference in favor of motivation, according to the t-test indicates that means higher level of motivation has a great affect on the achievements. Moreover, there is a relationship between motivation and creativity. Its indicate that if the creativity increased the motivation will increased consequently.

Table 3. Descriptive statistic for creativity factors (Fluency- flexibility- Originality - Details)

Variables	Means	Std. Deviation	n	Minimum	Maximum
Fluency	27.47	11.19	57	9.00	50.00
Flexibility	22.42	10.49	57	4.00	46.00
Originality	30.66	15.49	57	9.00	77.00
Details	37.22	27.15	57	2.00	130.00

Table 3. Shows the descriptive statistic of the four creativity factors according to Torrance classification (fluency, flexibility, Originality and details) and answer correction key. The table concluded that the mean value is between (22.42) to (37.22) and the standard deviation is between (10.49) to (27.5). So it means that the values of the four creativity factors are approximately too closed. Except the mean of details factor present a slight difference in the standard deviation.

Table4. Analysis of variance for creativity factors

Dependent variables	n	df	f	sig
Between groups	4	3		
Within groups	228	224	7.225	. 000
Total		227		

Table4 presents the analysis of variance for creativity factors (Fluency, flexibility, Originality and Details) between groups and within groups, the F value is equal to (7.22) and the significant value is (0.00) that means there is a significant difference between the four creativity factors. Moreover we notice that mean of the creative factors not are the same for the participant. So that it means the levels of creativity factors might increase in one and decrease in another. But all creativity factors are effecting on each others.

Table 5. Post hoc tests (multiple comparisons Dennett)

Mean A	Mean B	Mean difference	sig
Fluency	Details	-9.75	. 009
Flexibility	Details	-14.8	. 000
Originality	Details	-6.56	. 115

When we look at the post hoc analysis in table 5 of the creativity factors to compare the difference between the means. We find that there is a significant difference between mean A (fluency) with mean B (Details) due to the significant (.009). That mention fluency is affected by the details. In addition there is a significant difference between flexibility and details. Besides we could find that there is no difference between the mean in originality and details so that mean originality as a factor of creativity not affected by the details.

Table6. Analysis of variance between (Creativity- motivation- achievements) With program A

Dependent variables	n	df	f	sig
Between groups	57	3		
Within groups	57	224	37.24	. 000
Total		227		

Table 6. Presents the one-way analysis of variance between independent variables (Creative- motivation- achievement) with the independent variable (program A). The results display a significant difference between variables. So it means the creativity, motivation and achievement affect on the level of creative performance of computer programming. In addition the level of creativity and intrinsic motivation are working together to raise the creative performance of computer programming.

Table 7. Post hoc tests (multiple comparisons Dennett)(Creative- motivation- achievement- program A)

Independent variables	Dependent variable	Mean difference	sig
Creativity	Program A	-34.15	. 000
Motivation	Program A	30.71	. 000
Achievement	Program A	4.05	. 850

Table 7. Presents another method for calculating the significant difference between variables. Therefore we can conclude that there is a significant difference between creativity and student creative performance. As well there is a significant difference between motivation and creative performance of computer programming. It means that creative student who has the creativity and intrinsic motivation will be a creative person in computer programming. So the results give us notification that intrinsic motivation has a positive effect on computer creative performance. However when we look at the relation between achievement and computer creative performance, we find no indication between the two variables and that means the post hoc test not gives a significant difference in favor of the achievement.

Table 8. The Regression between independent variables and computer programmability

Bi variate linear regression										
Model	Predictors Constant	Dependent variable	R square	Adjusted R square	df	f	sig	t	sig	Beta
1	Creativity	Program A	. 055	. 038	1	3.20	. 07	47.39	. 000	. 23
2	Creativity	Program B	. 004	-. 014	1	. 201	. 65	48.65	. 000	. 06
3	Motivation	Achievement	. 009	-. 009	1	. 489	. 48	. 699	. 000	. 094
Multiple linear regression										
Model	Predictors Constant	Dependent variable	R square	Adjusted r square	df	f	sig	t	sig	Beta
1	Motivation Creativity Achievement	Program A	. 108	. 058	3	2.14	. 10	2.4	. 01	. 01 . 227 . 229
2	Motivation Creativity Achievement	Program B	. 199	. 154	3	4.39	. 008	1.13	. 263	.016 . 046 . 442

Table 8. Presents the research statistical method to predict the relationship between the variables and the effect size between the three independent variables (creativity, intrinsic motivation, and achievement) through the application of linear regression equation, and compare the result with the multi linear regression equation. According to the bi-variate linear regression to the first two variables creativity and computer creative performance for the first treatment in program A. We can notice there is a significant difference between the two variables. The regression between the two variable is equal to (. 23) due to the adjusted equation of regression (y=b x) the regression will be (computer creative performing = .23 creativity). As for program B we find that there is a significant difference between the two variables. The regression between the two variable is equal to (. 06) Due to the adjusted equation of regression (y=b x) so the regression will be (computer creative performing = .06 creativity). In addition we can notice that there is a significant difference between the two variables (motivation and achievement). The regression between the two variable is equal to (. 094) due to the equation of the regression (y=b x) so the regression will be (achieved = .094 motivation). However that means creativity, motivation, and achievement effect on creative performance of computer programming in a positive way. When we look at the multiple linear regression we could find there is a significant difference between the independent variables (creativity, motivation, achievement) with the dependent variable (computer creative performance of computer programming) in program A and program B. The equation which determines the size effect of the variables according to the previous discussion of multi regression (y= box + by+ bz), that means (creative performance of computer programming =. 01motivation+ .227 creativity+. 229 achievements), and for program B (computer creative performance = .01 motivation+ .04 creativity+ .44achievement)

13. Results and Findings:

According to the previous statistical presentation. The four experimental tools (Torrance creativity test, intrinsic motivation questioner, achievement test, and rubric to measure creative performance of computer programming) had been applied to find the relation between the variables in order to answer the research questions. The research works with three independent variables (creativity, intrinsic motivation, and achievement) with its effectiveness on creative performance of computer programming.
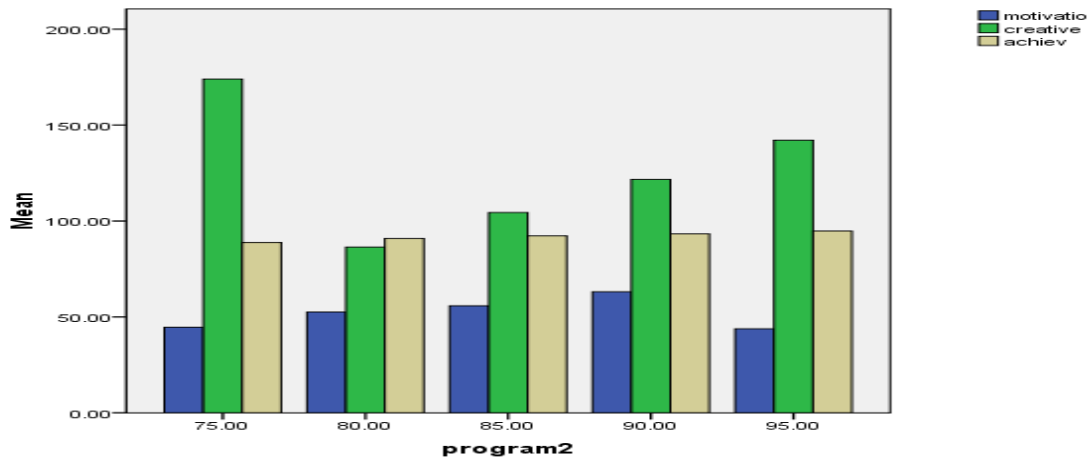
Figure1.show the relation between independent variables and program2

Figure1. Presents the steadiness of the results according to the three independent variables with the dependent variable computer program B. So the results gave the same score average to the second computer program. So this gives us consideration that the three independent variables have a positive indication of creativity in computer creative performance.   According to the findings the blended learning program based on creative approach has a great effect on creativity, intrinsic motivation, and the achievement of the creative performance of computer programming. These findings agree with (Amabile, Conti, coon, Lazenby, & Herron, 1996) (Utman, 1997) (Zhou & Shalley, 2003). That means there is a positive relationship between creativity and intrinsic motivation according to the t-test results with blended learning program.
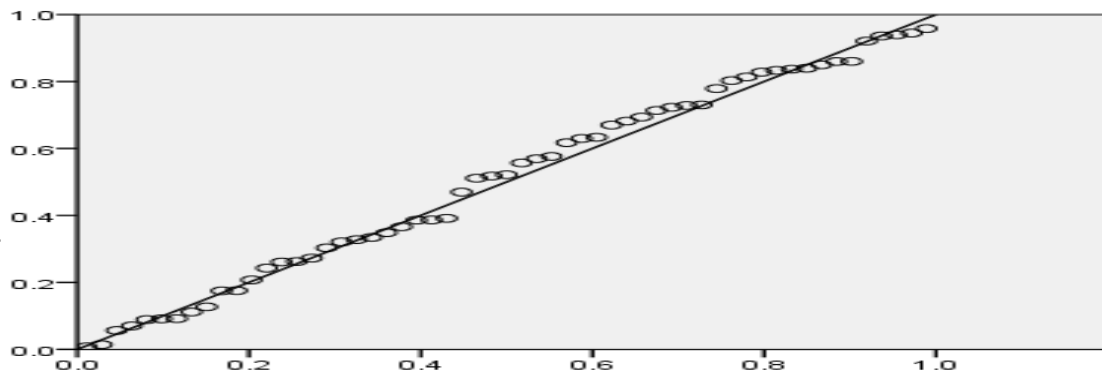

Figure 2: show the relation between independent variables and program B

This figure2. Presents the multi regression between the independent variables creativity, intrinsic motivation and achievement with dependent variable creative performance of computer programming. The figure shows the size effect between variables that means all independent variables effect on creative performance of computer programming. As for the relation between the four factors of creativity. There is a positive relation between the four factors according to the t-test valuation and analysis of variance (f value) between variables and within variables. That means all the four factors of creativity are affected by each other.

14. Conclusion and recommendations :

We conclude from the research results that blended learning as a teaching and learning strategies with creativity approach encourage students to learn and perform in a creative way. That means the creative approach is changing their mind in thinking and creating, moreover there is a powerful relationship between intrinsic

motivation and creativity. The statistical analysis of linear regression has shown this relation which respectively effects on the achievement of the computer subject. From the research results we recommend to integrate convenient teaching methods with e-learning program to get the benefit of the both methods to come over the shortage of them. So all the academy members who concerns with course construction should:

- Encourage students to explain how they are promoting their creativity, through specific creative e-learning applications in teaching practice.
- Develop supported materials to promote disruption of creative e-learning application within institutions.
- Develop self-evaluation tools to encourage teachers to review and evaluate their own understanding of applying creativity in their work by e-learning.
- Helping teachers to develop their facilitating skills to evaluate the transfer of e-learning creative thinking.
- Prove the evidence of e-learning can support creativity through active engagement with digital tools.
- Design of learning and teaching experience for creativity with digital technologies can be supported by the conceptual framework for creativity and teacher knowledge
- Give Student's feedback in a verity of ways on a range of issues.
- Provide a creative e-learning environment for experimentations in institutional atmosphere .

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