Factors Motivating and Hindering Information and Communication Technologies Action Competence*

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Abstract

Information and Communication Technologies Action Competence (ICTAC) can be defined as "individuals' motivation and capacity to voluntarily employ their ICT skills for initiating or taking part in civic actions". Since academic staff and teachers in ICT related fields have crucial roles in training action-competent individuals, this study aimed to determine the views of preservice teachers and instructors in Computer Education and Instructional Technology (CEIT) departments about the motivating and hindering factors regarding ICTAC. Researchers used purposeful sampling technique and identified seven instructors and 16 students attending outlier CEIT departments from four different Turkish state universities. Since there is no contemporary framework on factors motivating or hindering ICTAC, the study was conducted with a qualitative approach and the data were collected through semi-structured interviews. Factors motivating and hindering ICTAC were identified through a content analysis. Findings of the study are believed to guide ICT and ICT education professionals in training students with higher levels of ICTAC and guide the course developers to focus on relevant social responsibility issues.

Keywords: *Information and communication technologies action competence; Computer Education and Instructional Technology Departments; higher education*

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Introduction

Competence is an underlying concept for individuals to show better performance. Since there is no way to observe competence directly, it can indirectly be measured with performance indicators (Bassellier, Reich and Benbasat, 2001). The competence concept can be addressed as a performance, skill or personality trait. Such different uses raise the uncertainty regarding the definition of the concept. Odabaşı et al. (2011) define competence as individuals's self-confidence and ability to handle a problem with different perspectives through their professional knowledge and interdisciplinary processes. Within the context of the action competence, the term can be defined as a wholistic construct involving different literacies, critical thinking, responsibility, motivation and vision, all of which are necessary qualities to solve a societal problem.

Ehlers (2007) enlists the factors that support the development of action competence as social interaction, disagreement/conflict, discomfort and problem solving experience. Furthermore, Scott (2011) states that it is quite important for action competent individuals to carry out activities, which could influence the society and young individuals in making real-life decisions.
Some can state that the fields and scope of action competencies may change with culture, which is a common-sense argument. Moreover, the type of action competence as determining the problem, conducting in-depth research in the field, developing a vision, planning and taking action, and evaluating may vary depending on the particular subject as well (Mogensen, 1997).

Action competence is an area of study that may allow practical implementations on different fields such as environmental problems, health problems, peace and curricula. Action competence involves more than just being aware of the problems or having certain skills. The first phase of this competency involves recognition and awareness of the field. In addition, the difference between action competence and other applications emerges in the phase of 'taking the action'. In the related literature, there are a lot of studies on action competence addressing health and environment. One of the fields where the reflections of action competence are rarely seen is the field of Information and Communication Technologies (ICT).

ICT's are a natural extension of our daily lives. By 2011, almost 34 % of the world population had Internet access, and between December 2000 and June 2012, the ratio of Internet access increased by 56 % throughout the world (Internet Usage Statistics, 2012). According to a comprehensive survey conducted by the Turkish Statistical Institute (TUIK) in April 2012, the ratio of the households with Internet access across Turkey was 47.2 % (TUIK, 2012). This ratio was found to be 8.66 % in a similar study carried out by TUIK in June 2005. This result demonstrates that Turkish household Internet access increased by 545.03 % between 2005 and 2012 (TUIK, 2012). Moreover another report by TUIK (2010) states that three out of five Internet users use the Internet daily, and houses take the first place in computer and Internet use. These reports suggest that Turkey has a higher level of ICT use than the world's average. In this regard, ICTs could be considered among the primary tools for conducting actions that may have positive influence on social life. However, it is striking that there are very few studies employing ICTs for the benefit of societies. This situation underlines the need for the concept of ICTAC.

ICTAC can be defined as individuals' motivation and capacity to voluntarily employ their ICT skills for initiating or taking part in civic actions (Odabaşı et. al., 2011). Since academic staff and teachers in ICT related fields have crucial roles in training action-competent individuals, this study aimed to determine the views of preservice teachers and instructors in Computer Education and Instructional Technology (CEIT) departments about the motivating and hindering factors to ICTAC. In line with this

purpose, the current study addressed the following research question: What are the factors that motivate and prevent contribution to the solution of societal problems with the use of ICTs?

Methodology

Research Model

Since there is no contemporary framework addressing facilitating conditions and barriers to ICTAC, the current study was designed with a qualitative approach and the data were collected through semi-structured interviews. The semi-structured interview technique has certain benefits such as providing the researcher with flexibility, achieving a higher rate of response, observing non-verbal behavior of participants, supplying the researcher with control over the environment and reaching in-depth information (Neuman, 2003; Yıldırım & Şimşek, 2006).

Participants

A recent 44-item Likert scale on ICTAC developed by Kurt et al. (2012) was administered to 83 CEIT instructors and 2570 students. Both implementations had high internal consistency coefficients (i.e. 0.95 and 0.97) and a robust single-factor structure. After the descriptive analyses, four outlier universities (i.e. two high-level, two low-level) in terms of the ICTAC average were detected. Then, seven instructors and 16 students enrolled at these universities were selected as the participants of the current study, which represented a purposeful sampling procedure. Two of the instructors were females, and the other five were males. Six of participant students were females and the rest were males. The real names of the participants were not mentioned in the study due to privacy issues and all were given pseudo names.

Data Collection

Parallel to the purpose of the study, a semi-structured interview form was prepared by the researchers. Five field experts were asked for their views about the validity of the interview form. In line with the experts' views, the interview form was modified. The participants were interviewed on the dates and at the times they preferred, and the interviews were held in a place approved by each participant. At the beginning of the interviews, the participants were informed about the overall purpose of the interviews and were asked for their oral permissions for audiorecording of the interviews even though they had previously given written permissions.

Data Analysis and Interpretation

Following the interviews, the audio-records were transcribed. For the trusthworthiness of the transcriptions, field experts in qualitative research methods were asked for their views on robustness. Afterwards, the responses given to each question were marked on the related indices, and a classification was made on the basis of each question. As a result, the data were ready for the analysis. In the current inductive analysis, the research data are coded; themes are determined; the data are organized according to the themes and codes; and in the last phase, the findings are interpreted as suggested by Yıldırım and Şimşek (2006). Moreover, the coding scheme was used by independent researchers to sustain inter-coder reliability, which was calculated as 86 % with the formula of Miles and Huberman (1994): Number of agreements / (Number of disagreements + Number of agreements)*100. In the next section, the data were organized based on the themes followed by the interpretation.

Findings

The semi structured interviews with instructors and students focused on motivating and preventing factors for ICTAC. Table 1 summarizes the themes and sub-themes emerged themes obtained from collected data.

Table 1. Themes Reflecting the Summary of Instructor Perceptions

Factors motivating ICTAC	
	Awareness
	Literacy
	Curriculum
	Motivation
Factors preventing ICTAC	
	Time
	Financial problems
	Social support
	Literacy
	Lack of the freedom of thought

Among motivating factors for ICTAC, instructors specifically mentioned of awareness followed by literacy and curriculum. In terms of awareness, one of the instructors (OÖ1) stated "*Awareness is something like keeping up with the current agenda regarding this subject… ICTs help follow the current agenda and raise awareness*", while another instructor (ÖÖ2) stated "*… awareness is very important for me. I believe I have reached this awareness thanks to the curricula*".

One of the instructors (ÖÖ1) mentioned literacy as "*First of all, of course, we should be knowledgeable about this subject. We have to read so that all other people around can see what these literacies are and what these technologies contribute to or take away from people. In order to see the results, we are supposed to have full grasp of the subject. I think, information literacy is quite important both for our own development and for us to become beneficial to others*". Similarly, the instructor stated "*… the use of ICTs for the benefit of the society is itself a motivating factor. In a sense, you are getting close to the societal problems as your literacies (media literacy, information literacy and liberal education) increase. You become more interested in the societal problems. Perhaps, you learn to view societal problems from different perspectives with literacy*". Another instructor (EÖ2) emphasized the importance of literacy by saying "*This is very important; it is quite important to use technology and to acquire the skills that we call as computer literacy. Lack of these skills will result in problems*". Depending on the instructors' views, it could be stated that the instructors emphasized different domains of literacies such as information literacy, media literacy and computer literacy. As pointed out by the instructors, in order to provide solutions to societal problems within the context of ICTAC, individuals are supposed to be literate in more than one field. Thus, individuals with literacies in different fields can actively use their literacies in solving societal problems.

Another important motivating factor mentioned by the instructors was curriculum. With respect to their field of study, CEIT instructors stated that curriculum was a motivating variable for them. The instructors' views about this subject were as follows:

> "*First of all, what motivates me most as an academician is of course the curriculum. This really affects me a lot. Not only the advantages brought about by the academic world we live in, but also the current working conditions inevitably influence us regarding this subject; the subject that the curriculum leads us to. I think this is the most important factor. Of course, what raises this consciousness is the curriculum...*". [ÖÖ2]

> "*...even there is no CEIT departments, programs or undergraduates, teacher training curricula must cover CEIT courses. … even within the scope of the liberal education, CEIT experts are the ones to teach ICT literacy. I think this is the responsibility of those who know this field well...*". [BÖ2]

Among the instructors, BÖ2 and BÖ1 considered motivation as one of the factors that facilitates ICT-based contribution to the solutions of societal problems. BÖ2 stated "*…motivation is something necessary at all times. That is, I think motivation is the primary thing in solving societal problems, if there is no willingness… You will not do anything if you don't have any desire, well, you won't even move...*". In this regard, BÖ1 said "*We should increase the motivation of our society without any hesitation or fear...*", Another instructor (ÖÖ1) addressed personality traits saying "*First, I regard it as a conscientious duty. What comes first into my mind is the desire to become beneficial for people by sharing my knowledge or what I own. That is, your knowledge motivates you to share it with other people; this increases your motivation and encourages you. It is a source of happiness. Sharing with others makes you happy*".

During the semi-structured interviews, the instructors stated that the factors preventing contribution to the solution of societal problems with the use of ICTs were time, financial problems, lack of social support, literacy and lack of the freedom of thought. Instructors emphasized the factor of time through the following statements:

> "*Time is certainly one of the biggest problems. I am talking of my courses, my faculty and myself. We have to teach courses to our students here, at faculty... Well, time is of course an important problem.*" [ÖÖ1]

> "*...well, I can say time is something like, within my actual living conditions I don't have much time to establish relationship with the society. Time is crucial for me, and it influences me.*" [ÖÖ2]

> "*Now, I teach for 30 class-hours a week. This is an inhibitory factor for me… I don't have extra time for other activities. Well, if I talk about one of my routine days, here, I leave school at half past eight at night, and I'm home at ten thirty. I eat my dinner by twelve o'clock. And I study till three in the morning.*" [EÖ1]

Another instructor (EÖ1) emphasized the importance of financial problems and reported that seeking for solutions to societal problems without expecting any financial benefit was in the second place. Regarding this, the instructor stated

> "*We are in a terrible financial situation. That's, well, besides our salaries paid by the government, we have extra jobs. As we are computer experts, we certainly know a lot of people in every field. Well, for sure, they bring us more income. Thus, in such a case, of course, you feel yourself guilty. Normally, my main profession, my job is here. Actually, the salary I get should satisfy me, and if it did, why would I try to earn extra money outside the university. Well, this thought even disturbs me… That's, our first concern is of course to make the ends meet, to earn our living. This is our priority, so when I can not meet this need in my own work-place, where I get my salary, I naturally have to divide myself into different jobs.*" [EÖ1]

Similarly another instructor (OÖ1) mentioned the financial state saying "*ICTs are at least supposed to contribute to or strengthen the living standards of a person who tries to solve a problem. Well, at least, it should provide (financial) support in the process of solving that problem*".

Among the factors preventing ICTAC instructors also mentioned the social support. One of the instructors (ÖÖ2) mentioned the importance of the social support with "*Here, social resistance could be important. It's one of the most important things because we have two concepts: digital natives and digital immigrants. Regarding these two concepts, ı believe unfortunately, one of the most important obstacles is the digital immigrants' resistance. Also, I think habits and attitudes also have influence … I certainly believe that the resistance of people around, that is the characteristics of other people, is influential*", while another instructor (BÖ2) reported that social support could be a preventive factor saying "*...for example, financial issues, the social support etc. etc. ... even if they all seem to be the contributory factors, well, they might sometimes be preventive factors as well...*"

Literacy, which was reported by the instructors as a motivating factor to ICTAC, was also considered as a preventive factor. Regarding this, one of the instructors (OÖ1) stated "*I can talk about the incompetence in technology literacy. For example, when we give training on smart boards, the first response by elementary or secondary school institutions in our region is asking such questions as how difficult it is to learn, or how long it will take to learn, or how much it will cost*". Another instructor (ÖÖ1) said "*In fact, one of the biggest problems is our lack of competence in technology*". ÖÖ2, another instructor, believed that literacy in different fields could be a motivating and preventive factor simultaneously saying "*…and I can talk about the time regarding the growth rate of technology. These are motivating factors because technology is developing very rapidly. Sometimes, even we can not keep up with it...*"

Besides the preventive factors mentioned above, an instructor (EÖ1) stated that there was no freedom of thought at universities which could be an important preventive factor:

> "*But, we are in such a situation that the moment students come together in the university campus and try to make a speech, the police take action and disperse the student groups. Well, we are now in the forefront. Our students can not freely express their thoughts…. When I am in class as an instructor and when, to tell the truth, for motivation purposes, I sometimes say "today, there is something like… well I read in a newspaper that… what do you think about it?", I can feel tension in class. How come? Will the professor criticize the government? Or is the professor in line with the opposition party? Questions like these… immediately, they just think about personal or political issues. We do not give these to our students: well, here, we should be those who should discuss such things because, before anything else, we are educators. If we don't discuss, this country will not go better. Now, thanks to the education here, we teach our students how to criticize and discuss. But we believe they should not criticize or discuss. Thus, we can not expect them to respond using technology. And they can't do so physically with their words*" [EÖ1].

The illustration of the factors, which were reported during the semi-structured interviews by the CEIT instructors as motivating and preventing factors were demonstrated in Figure 1.

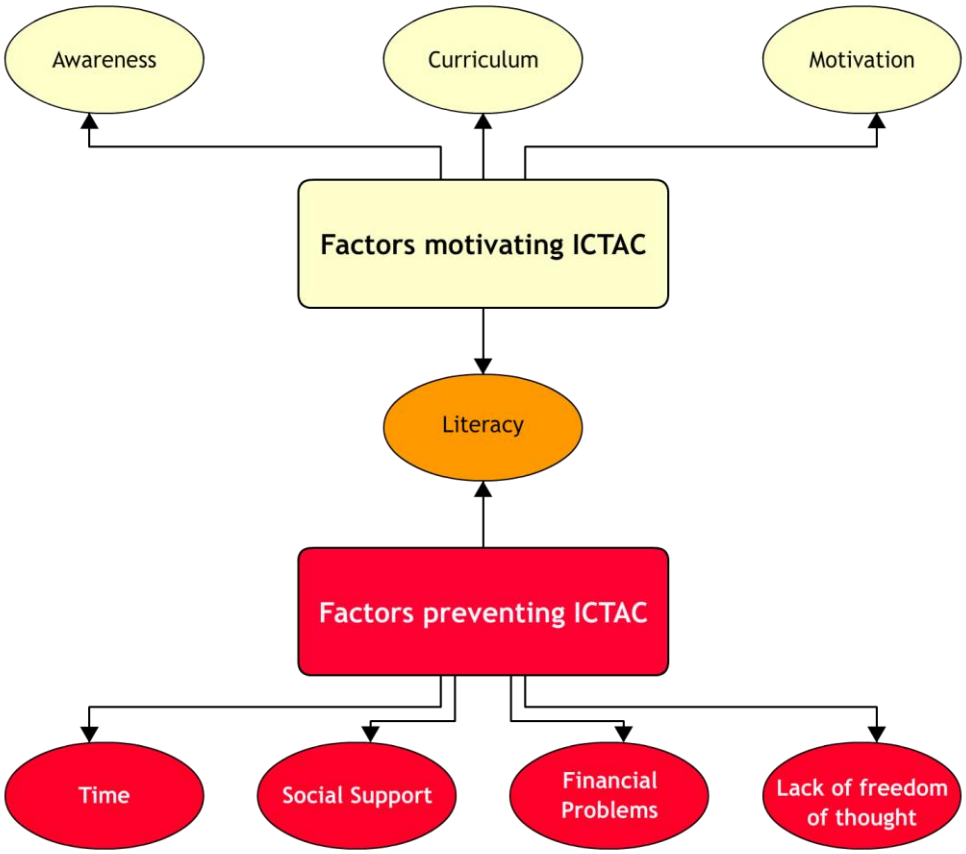

Figure 1: Illustration of the Factors Motivating and Preventing ICTAC as Perceived by the Instructors

The semi structured interviews with students focused on motivating and preventing factors for ICTAC. Table 2 summarizes the themes and sub-themes emerged themes obtained from collected data.

Table 2. Themes Reflects the Summary of Student Perceptions

Factors motivating ICTAC
Motivation
Awareness
Literacy
Curriculum
Financial status
Factors preventing ICTAC
Social support
Curriculum
Financial status
Time
Motivation
Lack of knowledge

The themes regarding the factors that motivate ICTAC as perceived by students included motivation, awareness, literacy, curriculum, financial status. Regarding motivation, one of the prominent themes, the students reported "*Well, this is something that should the considered personally. Because this is something that motivates not just me but the country I live in, the people around and everybody. Since it is something based on human instinct. I think it is related to demonstrating your reaction and putting forward and sharing a solution*" [EÇ3], and "*this is related to consciousness, well related to all our consciousness; if we become more motivated, or if we do a thing just because we want to do it rather than considering it as a task assigned to us, I think this is then the most motivating factor for us*" [ÖÇ3]. Another student stated "*as there is no extrinsic reinforcement to increase my motivation, there is no action taken. All the time, what you have done remains only in your external harddisc*" [OÖÇ1]. Depending on these views, it could be stated that the students emphasized the importance of intrinsic motivation in ICTAC in addition to external reinforcements. In this regard, intrinsically motivated people are expected to demonstrate actions easier once they have extrinsic reinforcements.

Awareness claimed to be another motivator. One of the students (BÇ2) mentioned "*Well, of course, awareness is the most important one (of the motivators), being a conscious user... when you become a conscious user comes first. You can then help others consciously*". Regarding this topic, another student (EÇ2) reported "*first of all, you should be aware of it. I feel something doesn't go right. Then comes the question of 'what can I do?'… Thus, if you raise your awareness, then it is okay. There is something wrong, but the next step is 'what can I do?', and then you have to follow your instinct. Here, I have reacted, but that shouldn't be all. Well, our reactions should stay permanent*". Depending on these views, it could be stated that the students emphasized the sustainability of actions and they believe they could take more effective actions once their awareness is raised.

The students also emphasized the concept of literacy. "*Today, we live in a computer age. Computers are everywhere, in all businesses, and even in governmental institutions. Many things are done with the computer, and this encourages people to use the computer and benefit from information and communication technologies…*"[BÇ2]. Furthermore BÇ3 sateted: "*well, for people to develop themselves, for the society, we live in a computer era… because in our country, the Internet-use rate is increasing, but there is lack of literacy. Well, thinking about the television or the Internet itself, there are few publications in this field...*".

Another point mentioned by the students was the CEIT curriculum. Some of the students thought that the CEIT curriculum contributed to becoming an ICT-action-competent individual, while others believed that only some of the courses in the curriculum had contributions. Regarding this theme, the students reported their views as follows:

> "*To tell the truth, technically, I didn't learn much in CEIT. Only in theory. How can a picture draw attention? Or how can one remember it easily? Well, regarding this topic (design), let me tell you something; the course that I found most useful was Instructional Design. That was the only course that guided me for four years*" [OÇ1].
> "*Well, to me, our curriculum in CEIT was sufficient to do such things (conduct actions). What is important is that we should make the most of it*" [OÇ2].

The students stated that the financial state was among the factors motivating ICTAC. Regarding this topic, one of the students emphasized the importance of the financial conditions saying "*financial state… this is an important point… it depends on the financial state if a person wants to deal with others' problems rather than with his or her own ones. The reason is that even the birth of philosophy was a result of the wealth in Greece. They didn't have any problems; that is, they developed thought, or philosophy, as they didn't have anything else to engage with. So, this is*

something closely related to financial state. The better a person's financial state is, the more effective he or she can be in certain issues" [EÇ4]. This quotation seemed to represent the financial state as either motivating or hindering. The researchers worked out the meaning from the context that financial state fantasized by the participant was a motivating factor. However, the fact that the participant was not happy with the current financial state was a hindering one.

It was thought that the motivating factors reported by the students were influenced by the students' lack of knowledge regarding the scope of ICTAC. Therefore, it could be stated that informing students about ICTAC could enrich the motivating factors reported by participating students.
The themes addressing the factors that prevented ICTAC were social support, curriculum, financial state, time, motivation and lack of knowledge. Regarding social support, the students reported their views as follows:

> "*...For example, when I start talking about such a thing, or when I want to do so, people around me tell me to sit and deal with my courses; they also say 'will it do any good for you? What goodness will it bring when you do a favor?'...*" [ÖÇ4].
> "*...Well, if my parents don't support me, I may not help other people even if I do want to do so...*" [BÇ1].

> "*Of course, it has great influence, I mean the social support. Most people demonstrate biases. It is quite difficult to change this... the previous generation does not know how to use a computer; well what they have witnessed is generally a little child playing video games on computer, and they waste their time on the computer. Thus, when they see us in front of a computer, they immediately develop prejudices. Even if we do our job on the computer, they think we waste our time. So, honestly, this prejudice influences us negatively*" [BÇ2].

> "*…How will people react when you want to take an action? That's important. It is important whether you will be able to draw others' attention to your project...*" [BÇ3].

The students' views demonstrate that the social support is effective especially in the phase of taking action. In this regard, it could be stated that in taking individual actions, other peoples' views and reactions are considered important especially by students as they seek approval for what they want to do.

Curriculum was another factor mentioned by the students as preventing ICTAC. While most courses found in the curriculum of the CEIT departments are common, some elective courses may vary depending on the department. Regarding this topic, some of the students reported that there could be differences in students' viewpoints about societal problems and about the actions to be taken based on the nature of the curriculum. Some students stated that certain courses found in the curriculum of the CEIT departments could help them gain ICTAC. Following statements address this theme:

> "*There are generally similar courses in the curriculum of all universities, but the elective courses differ. Moreover assignments and projects vary. Thus, I can say it depends on the (curriculum and activitis within the) university*" [OÇ1].

> *"…CEIT departments can not equip students with such skills. Well, in fact, it has quite little influence. There are no activies related (to ICTAC). Think of a citizen who designed a website, prepared the content with his own ideas, addressed some people with the website, shared some others' ideas. On the contrary think of a CEIT graduate who has designed a website, but without a sufficient content. Even though I know how to design, the latter becomes meaningless. CEIT department teaches me how to design again. But,*

in such an action plan, the design is certainly effective, but as I said before, the CEIT department does not provide any further benefit" [EÇ4].

The students further mentioned the financial state under the factors preventing ICTAC, which was also found among the motivating factors. Regarding this topic, one of the students (BÇ4) reported "*a person should have a good financial state to make financial contribution… the financial state is of course very important; well, a person who wants to make a contribution can not do so if his or her financial state is not good* ", while another student (ÖÇ2) stated "*If what I want to do exceeds my financial state, then I cannot do anything. It could only be related to the financial state...*" Another student (BÇ2) emphasized the importance of financial state saying "*...Also, there are various computer software. They sell these programs, and this influences us financially*". It could be stated that it is an expected situation for students who do not yet have economic freedom to think in that way. Thus, regarding the ICTAC, students could be made aware of the fact that financial state is not important in taking action for a particular societal problem and that they can demonstrate ICTAC without making any financial contribution.

Regarding time, which was one of the themes related to preventive factors, one of the students (OÇ4) stated "*Of course, this is my own life. (I cannot sustain an action) If it covers my whole life... and I have to earn my life. Now, after graduation, I will have my own future. And, I have to learn. Well, if it covers only a part of my life, then it is okay for me*", while another student (BÇ2) reported "*...in term of time, we can have problems when we have to do a job in a shorter time which would actually take a long time...*" It could be stated that as in all taks, students can individually contribute to the solution of societal problems and increase their individual satisfaction with effective time management and planning.

The students mentioned the theme of motivation saying "*...There could be motivation...when you want to work on raising the society's awareness level, or when you feel you are not competent in this subject, then there may occur the motivation problem...*" [BÇ2]; "*…as I said before, lack of motivation is the most important reason of this ... as we said before, there is no intrinsic motivation, and we don't have any motivation, then to tell the truth, we can't do it as a society*" [ÖÇ3]. ÖÇ4 touchest the same topic "*Well, what decreases my motivation (is lack of social support). When you say 'I will do something', (they discourage) instead of supporting you. When you meet such negative situations more, well, the first time, you do it, the second time you do it again, but the third time, you feel it is none of your business…*" [ÖÇ4]. Students agreed with instructors on motivation as a preventing factor for ICTAC. It could be stated that students' intrinsic motivations could be increased through presentation of examplary actions. At the same time, students should be made conscious of the fact that the experienced problems are not only particular individuals' or institutions' concerns but also society suffers from them.

Besides aforementioned factors, one of the students (BÇ1) considered lack of knowledge on problems fields as an important hindering factor. "*First of all, I should deal with it, and then we should all, as a society, be aware of what to do. Thus, I have to learn about it (problem)*". Similarly, another student (OÇ3) reported "*I don't think I'm competent in these subjects… ICT literacy, organizing (and sustaining actions)…*" In this regard, in order to increase students' knowledge in different fields, it could be beneficial to direct them toward a rich array of elective courses and different activities; and to have them participate in relevant student and social clubs. In this way, they could overcome their lack of knowledge in different fields.

The illustration of the themes which were reported during the semi-structured interviews by the CEIT students as motivating and preventing factors were demonstrated in Figure 2.

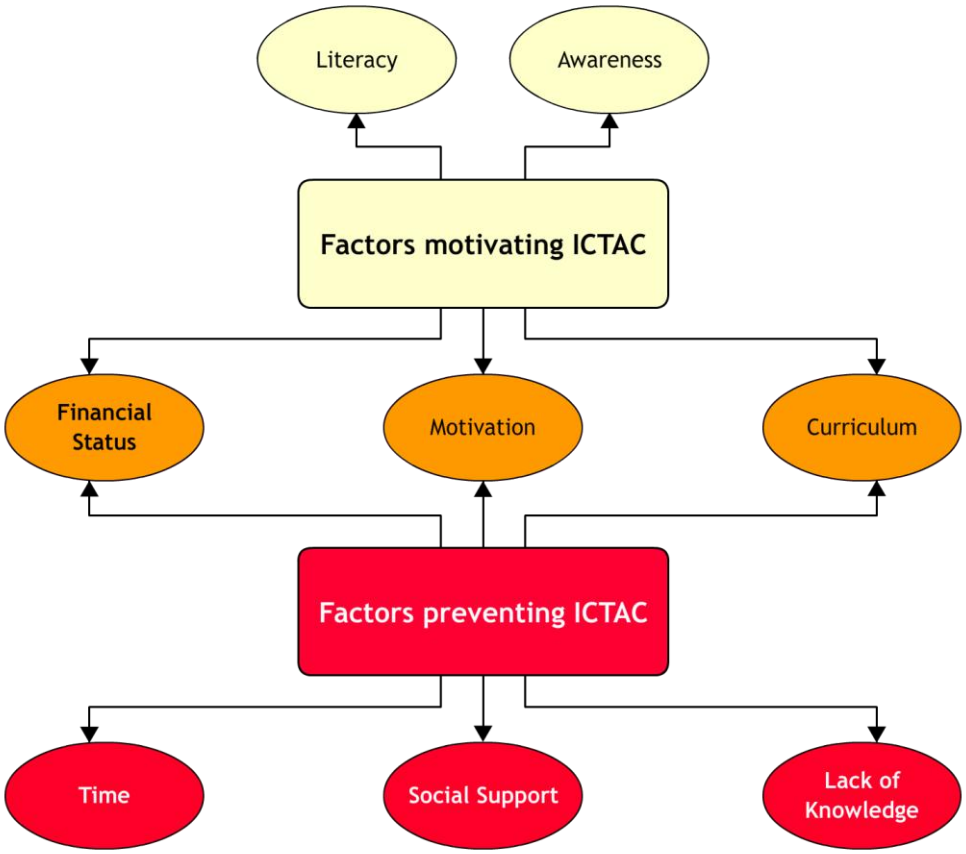

Figure 2. Illustration of the Factors Motivating and Preventing ICTAC as Perceived by the Students

Conclusion

Current study reports findings on the factors motivating and preventing ICTAC. Semi-structured interviews conducted with purposefully sampled CEIT instructors and students were reported in the current study. Analyses of data coming from instructors revealed that awareness, literacy and curriculum were among the motivating factors. These factors could be associated with the cognitive domain, which is one of the components of the action competence as described by Breiting, Hedegard, Mogensen, Neilsen and Schnack (2009). Cognitive domain includes literacies regarding the problem area and clues for possible actions. Among the factors preventing ICTAC, the instructors mostly emphasized the time and financial limitations. Considering the common responsibilities such as offering courses, conducting research and training students, time inevitably seems to be an important preventive factor. Integration of professional development activities addressing time management could help instructors carry out a number of activities in a more productive manner. Additionally financial state was determined by the instructors to be a preventive factor. It could be beneficial to take different professional development activities into consideration. These activities might be carried out in a more productive manner if instructors are convinced that they can contribute to the solution of the societal problems without any financial contribution or dedication. Some may even think that a slight improvement in their current financial status may reflect itself on their dedication to community services.

Literacy was a common factor under both motivating and preventing ones. Since different literacy skills are needed in all phases of action competence such as recognizing and examining societal problems, establishing the action plan and taking action; this was not an unexpected pattern.

The interviews conducted with the students revealed that the most motivating factor for ICTAC was the motivation itself whereas the primary hindering factor was the social support. Both findings can be associated with the value-based characteristic of action competence, which was suggested by Breiting et al. (2009). In other words, motivation and social support could be considered to be one of the filters that guide an individual in the process of determining and conducting the actions. That is, even the individuals with higher motivation may expect additional support from the society before taking any action.

Motivation, social support, curriculum, financial state and time were among the common factors that both motivate and hinder ICTAC. The hindering ones as perceived by the students could be transformed into motivating ones through problem-based personal and professional development activities. These way students could be encouraged to take action.

The fact that time, financial state and social support were mentioned by both the instructors and students, demonstrates the need for in-depth studies on these issues. The current study is conducted in an oriental culture where individuals' perceived value is largely determined through the society's judgements rather than objective contributions. Thus, further in-depth studies should be conducted in cooperation with educators, sociologists and socio-psychologists to retain or reject current speculations. Moreover, the current findings might have appeared due to time management problems of the current culture.

The present study could be of significance since it focused on action competence within the context of ICT in a new culture. The concept has been previously studied in several countries, particularly in Northern Europe, within the contexts of environment, health and peace education. The study was also important as it investigated the factors motivating and contributing to the solution of ICT-based societal problems.

ICTAC, which has emerged with the adaptation of action competence to the field of ICT, is a new concept in the field. Therefore, informative meetings involving exemplary actions could be administered with different target populations. Seminars, informative meetings and in-service training endeavours could help instructors –who train future IT teachers and who are role models for them– increase their awareness regarding ICTAC. Furthermore, within the scope of the responsibilities of an individual for the society, the results of the present study may guide the course developers to focus on relevant social responsibility issues such as the Social Service Applications course mentioned by the participants during the semi-structured interviews. The present study may also contribute to future studies to be conducted in different fields, which will examine the factors motivating and preventing ICTAC.

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