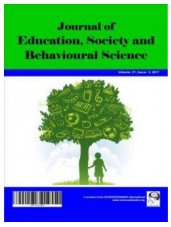

Journal of Education, Society and Behavioural Science

25(3): 1-9, 2018; Article no.JESBS.41873
ISSN: 2456-981X
(Past name: British Journal of Education, Society & Behavioural Science, Past ISSN: 2278-0998)

Digital Tools Contributions to Prevent Addictions in Nursing Students

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Authors' contributions

This work was carried out in collaboration between all authors. Author DCTP designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors SDRR, BLM and MPIG managed the analyses of the study. Author MPIG managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JESBS/2018/41873
Editor(s):
(1) Shao-I Chiu, Associate Professor, Taipei College of Maritime Technology of Center for General Education, Taiwan.
Reviewers:
(1) M. Rajendran, Madras University, India.
(2) Ibrahim El-Zraigat, The University of Jordan, Jordan.
Complete Peer review History: http://www.sciencedomain.org/review-history/24719

Original Research Article

Received 30th April 2018
Accepted 16th May 2018
Published 21st May 2018

ABSTRACT

In the health area it is necessary to implement innovative strategies to adapt inside a society where information and communication technologies (ICTs) are widely used, specifically to prevent or limit drug use and abuse; so, we aimed to identify the contributions of digital tools in preventing adolescents' addictions. The research was qualitative with a phenomenological method considered in the Sociology of Daily Life, within Social Sciences. The scenario was the National Autonomous University of Mexico (UNAM), and the informants were 13 students, 20-23 years old from a Nursing career. Data collection was obtained through 2 semi-structured interviews, students were informed and they signed an informed consent, data analysis was qualitative. Four categories emerged with subcategories describing digital tools contributions in risk perception, emotions, self-care behaviours

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to prevent drug addiction and treating the addict with dignity and respect. In conclusion, immersion tools allow students to experiment, in a controlled setting, public health problems difficult to approach like use and abuse of drugs. Enacting lively situations lead them to experiment with their ideas, values and experiences, since being surrounded by an individual, familial and societal risk factors poorly addressed emotions, including low-risk perception, induce adolescents to actively construct their own learning critically and thoughtfully.

Keywords: Digital tools; addiction prevention; adolescent; psychoeducational.

1. INTRODUCTION

New technologies of information and communications (ITCs) have intensified adolescents' interrelationships, since they do no limit anymore to physical encounters but experience virtual contact, and they use ITCs to do what youths have done before, i.e., talk to friends, get informed of what is going on in their context, coordinate daily activities, talk about their worries, listen to music, watch TV series, among others; what has changed with these digital tools is not what they do but the ways their attention is captured. Several reports mention that to get a better academic performance it is suggested to update the ways to elaborate, acquire, and transmit knowledge; that is why the educational systems, mainly in human resources education in the health area, must implement innovative strategies to adapt to an ITCs-submerged society in such a way that the use of interesting didactic materials guide and motivate individuals to construct their knowledge, favoring changes in behavior, the main goal to self-care throughout life. Diverse investigations mention that in order to improve the academic performance it is suggested to update the ways to elaborate, acquire and transmit knowledge then the educational systems on human resources formation in health area need to implement innovative strategies in order to adapt to ITCs' immersed society, the use of interesting didactic materials, that guide and motivate individual's knowledge construction favoring their behavior change, which is a prime goal of the self-care in different life steps [1,2,3,4].

In the last decade the unbearable problems of public health, at local and international extent in vulnerable groups, have motivated that health and psychoeducational research focus in problems like drug addiction and bullying since both phenomena share individual, familial and societal risk factors in order to prevent or limit those experiences [1]. So, we are interested to delimit those factors that impact emotional welfare, quality of interpersonal relationships, health and academic performance, among others aspects in adolescents, as well as psychosocial characteristics and the media bombarding that surround them and keep them in a constant risk [2,3]. It is hypothesized that this strategy enables interactive learning that combines ICTs use, enactments, and enhanced reality to construct collaborative surroundings where individuals participate idealizing themselves but it is a community learning without risks. The aim was to identify the contributions of ICTs in preventing addictions in adolescents.

This new perspective highlights that develop and practice of these digital tools are vital for adolescents to adapt and contribute to physical and psychological well-being, and to transit from adolescence to adulthood in an assertive manner independent of their IQ or other personality features, favouring self-care behaviours [2,3,5,6,7].

2. METHODS

2.1 Design

The research was qualitative with a phenomenological method considered in the Sociology of Daily Life, within Social Sciences as a philosophical trend centred in person's experience instead of group's perspectives. Qualitative research is adequate to solve public health problems difficult to approach [8,9]. The scenario was the National Autonomous University of Mexico, and the informants were 13 students, 20-23 years old from the course 'Attention to addictions in health area' from a Nursing career.

2.2 Eligibility Criteria

Inclusion: Students of both sexes, 20-23 years-old from the course 'Attention to addictions in health area' from a Nursing career.

Exclusion: Students not involved in the topic.

Elimination: Students not interested in participation.

2.3 Data Collection

Data collection was obtained through 2 semi-structured interviews, students were informed and they signed an informed consent, data analysis was qualitative.

There was a direct observation of participants in the different moments of their activities, i.e., before, during and after the video shots, as well as two semi-structured interviews about how they felt the experience.

2.4 Procedure

It is worth to mention that this work is part of years-long research in addictions and bullying prevention of Nursing career, and the digital tool (video) produced was subject to validation by a panel of judges where individual, familial and societal risk factors for use and abuse of drugs in a vulnerable group (adolescents) were exposed, taking in account the scenarios, characters, dialogues, messages, emotions, behaviors, attitudes and their consequences. Thirteen students watched a case video where an adolescent has high-risk factors for psychoactive drug consumption and his risk perception is very low, leading the main character as well as his companions to take not assertive decisions triggering a chain of consequences in his surroundings and himself.

In the second step, two groups (6 and 7 students) were formed and they received precise instructions and specific topics to develop a new digital immersion tool (video). Students designed, directed, enacted and edited a new story that favoured assertive behaviours in which each student performed a different personality character or him/herself. This part required that the workgroup observed the behavior, corporality, rationality and context in each scene before, during and after the video production; after the script and design by the groups, they had 4 days to record an edition of the video. Once finished, a semi-structured interview about their experience to perform about the selected character, which involved assertive behaviors, teamwork under pressure to complete the video, the coexistence, negotiation and agreement among teammates regarding ideas and mediation. The whole group watched the finished videos, they were asked to deliberate identifying the characters, emotions handling, behaviors, feelings, experiences and these strategies influence to promote health in the adolescent. The dynamics ended with a second semi-structured interview.

2.5 Data Analysis

Data coding and categorization was according to Souza Minayo, using 5 steps: to obtain verbal data, read and re-read the data, grouping by similitude and difference to obtain emergent categories, to organize and express them by a disciplinary scope, and synthesize/resume data to be presented to a scientific audience [9].

2.6 Ethics and Legal Aspects

For this research, we followed the Declaration of Helsinki and the Belmont report regarding research on human beings. A letter of signed informed consent was obtained from each participant; there is no conflict of interest among participants and researchers.

3. RESULTS

Demographic characteristics of informants were 10 women (76%), 20 years old (76%), 21 years old (16%), and 23 years old (8%).

After a detailed analysis of data, 4 categories emerged, with sub-categories (Table 1).

4. DISCUSSION

During adolescence, youths establish their independence, both emotional and psychological and they learn how to live sexuality and consider their roles in the society. This is a gradual process, emotive and sometimes disturbing; a youngster might feel disillusioned, disappointed, and hurt in a specific moment, and a few moments later, he might be euphoric, optimistic and romantic which may lead to developing risky behaviors [2,3,7]. The impact of his emotions is shown in his social and motivational adaptive functions, and for them their feelings appear along the development of independence filling a central place in every challenge during adolescence; however, adolescent's failure in solving a conflict between a continuous dependence and emancipation regarding his identity, may cause problems and risky behaviors such as use and abuse of drugs [2,3,10], which

is coincident with Category 1: Contributions of immersion tool in perceiving risks, and sub-category 1.1: Identifying risks factors for drug consumption, as in the following speeches:

> *[…] During enacting you get aware of addict behaviours, or not necessarily addict as my character but it was its drug addiction initiation; this is something in common all of us. E. 3*

> *[…] with the video I realized about my alcohol consumption, I recognize that I am getting accustomed that each Friday to attend a party or to drink no matter the reason. E. 13*

Without a reasonable awareness of separation and autonomy, we cannot expect that the adolescent reaches: mature heterosexual or homosexual relationships, career guidance, identity and independence sense all of which require a positive self-image. Emotion and cognition in humans are integrated. Being only rational impairs the access to a complex source of emotional knowledge, both characteristics inform us about action and contribute to solve problems and take decisions [3]. Developing emotional intelligence (EI) is necessary for adolescents to favour a strategy for self and others emotions identification, as well as to clearly and objectively identify risk factors they are immersed in [5,6,7,11,12]. Which is coincident with sub-category 2: Increase in risk perception in interpersonal relationships, emerging in the following speeches:

> *[…] to me was very interesting since I felt quite identified with Johana character I enacted, and I realized my risks since the family and friends surroundings were very similar to mine. Regarding coexistence and dealing with my mother, as well as the pressure of friends and peers to consume drugs. E. 12*

> *[…] My participation in the video helped me to identify risk factors I have and how to modify them, i.e., it is my friends, so I have to be more selective in treating those persons surrounding me. E. 11*

> *[…]My participation in the video allowed me to see more clearly my risk factors, friends is the biggest and most frequent we have; lack of communication in family is another one we all have, and finally individual risks where low self-esteem made us belong to a social group or to find acceptance doing whatever necessary. I saw things I was not aware of. E. 1*

Technological advances made it possible to have interactive learning, which combines 3D technologies (3D graphs, computer simulation, virtual reality, mirror worlds, enhanced reality), communication tools (live chat), web cameras and traditional digital media to create on line collaborative surroundings where individuals can participate through self- idealization (i.e., avatar), which allows participants community learning to create a character in a protected surrounding, but with great reality that favors developing risk perception to some events that seemed normal and now could be perceived as warning. In the present case, we look to adolescents' individual, familial and societal risk factors they face to use

Table 1. Categories and sub-categories emerged from speeches

Category	Sub-category
1. Contributions of the immersion tool in adolescent's risk perception.	1.1 Identifying risk factors for drug consumption.
	1.2 Increase of risk perception in interpersonal relationships.
2. Contributions of the immersion tool in adolescent's behaviours.	2.1 Identifying passive, negative and assertive behaviours.
	2.2 To favour taking assertive decisions.
3. Contributions of the immersion tool in adolescent's emotions.	3.1 To favour empathy and treating them an addict with dignity and respect.
	3.2 Awareness of self-emotions, from peers and patients.
4. Contributions of the immersion tool in adolescent's health education.	4.1 Innovative didactic strategy.
	4.2 To favour adolescent's self-care.

or abuse of drugs, their daily experiences lead them to visualize attitudes and behaviours as a normal way for interpersonal relationships, enhancing the chances to consumption. Immersion tools grant an excellent opportunity to enact and create risky contexts but with protection to participants, allowed real sensations and collaborative work that favour the increase in risk perception to the created contexts [4,13,14,15,16].

To integrate ICTs in the teaching-learning process involves many changes; in addition, ICTs offer an advantage in academic formation. As mentioned by Grimley et al. [13], students and teachers get benefitted by those advantages in the educational process, using them as didactic tools giving the appearance of Category 2: Contributions of immersion tools in adolescents' behavior, with sub-category 2.1: Identification of passive, negative and assertive conducts, and sub-category 2.2: Favors assertive decision taking, as observed in the speeches:

> *[…] with the video I could observe my behaviours which I can modify, I let myself carried away by friends, I always accept whatever to be with them, even if I do not agree. E.11*
>
> *[…] By enacting my character I realized that most of the time I decide to drink, and really understood that it is not the best thing to do. E. 9*
>
> *[…] I identified myself with the enacted character by organizing gatherings/party always involving alcohol. E. 5*
>
> *[…] with the video I observed that since we were kids drinking alcohol seems good, and that exposes us to consume it without seeing the long-term outcomes. E. 3*
>
> *[…] with the video I learnt to discern among my friends, and be aware who are my real friends after their attitudes. E. 6*

In the speeches, behaviours and subjective emotional loads around the adolescent are identified, which opens the opportunity to synergize EI as part of the tasks each adolescent must develop to control behaviours, attitudes, emotions and to improve mental health in the youth [17].

To emotionally educate adolescents will help them to develop and enjoy a favourable situation in their lives. Some studies report that having a high degree of EI is as important as having an elevated IQ. According to Tapia et al., Gutiérrez et al., and Hosseini and Zare Ansari, the dimensions or competences that support EI include self-awareness, abilities to identify, recognize and assess self-emotions; self-control, developing behavior independence; assertiveness to say what he thinks, feels, desires or needs in a clear and timely way; lastly, proactivity that triggers responsibility and discipline in the individual and is related with problem solving and decisions taking [3,4,11]. The second competence is the interpersonal, related with empathy and social abilities: empathy is to take in account the different ways of thinking, and social abilities involve collaborative practices, respect to others, tolerance, compassion, trust, and responsibility before the others [3,4,6]. This competence involves stress handling and adaptiveness to change and includes self-motivation and creativity abilities [12,14,16]. Self-motivation is identified by optimism, to have goals according to self-interests and desire to self-improvement; on the contrary, creativity contributes with flexibility, originality and the will to change or transform reality [18,19]. Which agree with Category 3: Contributions of immersion tools in adolescent's emotions, and with sub-category 3.1: Favors empathy and dignity treatment to drug consumers and their surroundings, and 3.2: Recognizing self-emotions, those of peers and patients, which emerged from the following speeches:

> *[…] this video changed my point of view about friends and addictions, I was a passive spectator but my thinking changed to my current opinion about a drug addict, from seeing them reluctantly the video made me aware of the unfair rejection we have to them. E. 4*
>
> *[…] I did not know how hard is for an addict to experience withdrawal syndrome, videos helped me to realize that addicts suffer a lot and we must see them as sick persons and as a nurse, I learned the respectful way to treat this kind of patients. E. 3*
>
> *[…] Enacting the video contributed knowledge on drugs and situations an addict faces, lighten my outlook on approaching*

strategy with respect and empathy for these patients. E. 8

[…] The video is a useful way to understand persons that become drug addicts since we get aware of what they live and feel. E. 11

[…] my role in the video helped me to understand persons that experience a similar situation, what they feel, it also helped to see myself in various situations. E. 2

adolescent to become an addict, but also helps how to avoid it. E. 8

[…] video is a good strategy since it allows us to apply acquired knowledge, is a better didactic way to teach and learn. E. 6

[…] I think it is a good learning and thoughtful activity.. it is an innovative and functional tool to strengthen learning during the semester, for myself and the others. E. 9

Developing EI, self-awareness and emotions control lead us to take assertive decisions since we have a thinking mind and a feeling mind and both ways of knowing interact to construct our mental life. The rational life is the comprehension mode we are conscious of, allowing us to consider and deliberate; the other way of thinking, more impulsive and powerful but sometimes illogical, is the emotional mind [3,5,11,12]. Accordingly, Tapia et al. Gutiérrez et al. and Caltenco et al. mention that using ICTs motivates and captures adolescents' attention, becoming one of the most innovative learning strategies to focus health issues [3,4,10], as described in Category 4: Contributions of immersion tools in adolescents' health education, and sub-category 4.1: Innovative didactic strategy and 4.2: Favors adolescent's self-care, which emerged from the following speeches:

[…] the video is a good educational tool to show drug consumption consequences, also you can discern your friends from others than do not care to harm you; it can be used as well to identify drug consumers that need help. E. 7

[…] creating the video is a distinct way to learn since it integrates knowledge useful for to help many youths experiencing this problem, but without taking the risks. This video is functional for adolescents to focus evil influences from friends and what to do instead. E. 4

[…] video's dynamics was very nice, interesting and I took it as a fun way to learn. It helped me to ground theory; this kind of activities must be used not only on addictions topic but in the whole health promotion area. E. 5

[…] the video and the enacting ground experiences so close to our reality, expose situations we can face and can lead an

However, in order to learn through ITCs it is essential to have digitally literacy both teachers and students, i.e., there are numerous virtual tools for the educational process. Each one of them shows great advantages and contributes numerous virtues centered in the student, they represent a process that adapts to current society requirements, i.e., virtual learning surroundings to collaborative work, to better and synergize interaction, team work, and then participants' learning as a result where students produce knowledge actively, getting ideas to share and create from reactions and answers by and with others [12,14,16,19,20,21]. Collaborative learning is active and teacher is a facilitator, teaching-learning are shared experiences and students must be responsible of their learning. They are induced to deliberate on their cognitive processes, and the social abilities and teamwork develop through a consensual approach, which lead to a deeper learning, critical reasoning, shared comprehension and long lasting retention of learnt material; it also gives opportunity to develop social and communication abilities, positive attitudes towards other persons, team cohesion, and social relationships construction. These effects are reinforced when collaborative work applies to flexible surroundings and facing complex tasks, inside real contexts such an immersion tool construction that increases efficacy in social construction of knowledge [15,20,22,23]. Social abilities are an important part in building identity through peers sharing and reflect different ways to communicate through gestures, voice tone, posture, dressing, etc. Learning acquired in family is complemented with influences of social groups in school, neighborhood, etc. [24,25,26].

An individual with social skills has followed a model that helped to synergize his social welfare [13]. Immersion tools are part of a wide arsenal that teachers have to implement and motivate students to construct their identity, to educate

their emotions and to emit assertive answers because the immersion and analysis of the video triggers thoughts, behaviors, attitudes and emotions that once watched can be shared in an open discussion, favoring ways for a real effective and affective construction, and the strategy fits inside culture, context and becomes a scenario where the adolescent transports his daily life and the lessons he learned to become part of his affective memory and stimulate the search for learning, allows and efficient way to educate themselves in ethics and values, as well as provokes deliberation [3,17,20,21].

Using ICTs has been recognized by the WHO, which identifies ITCs as a crucial ability to get an optimal development on health human resources, to improve the health systems and as an instrument to reach the goals of Millennial Development [27].

5. CONCLUSIONS

Educational strategies are changing very fast since ICTs have been incorporated in teaching-learning in schools as well as in health systems. Technological media are now part of the instruments that evaluate and construct schools curricula worldwide, updating teachers and students alike in order to close the gap between generations regarding ICTs. In health education teachers and students must modify and update their didactic strategies, because they will be used in communities, families and patients subject to study as an element to communicate and as an instrument to organize, management, educational administration, and research. Immersion tools allow students to experiment in a controlled environment public health problems difficult to approach, like use and abuse of drugs; they enact very real situations and lead to experiment according to their background, ideas, etc. One of the most important challenges of the educational system is to rapidly adapt to new forms, concepts and more efficient methods facing forces in their surroundings. Current society needs skilled persons to face the real world complexity; they have to be rational, critical and they have to analyze and synthesize information to solve problems and help construct a better world. Competency-based education considers students having abilities, attitudes and knowledge acquired before in their familial, societal and cultural where they live. Innovation by creating new immersion digital tools for to acquire significant learning will favour disease prevention and early intervention.

ACKNOWLEDGEMENT

This work was supported by a grant from PAPIME 301118, DGAPA, UNAM.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sciencedomain.org/review-history/24719