

Team-Based Learning and Life Skills: A Qualitative Study from Psychological Students Point of View

Running Head: TBL and Psychology Students

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Abstract

Purpose: This research employs a modified Team-Based Learning method to realise students perspective on how it can develop traits characteristics such individual growth and important life skills, like critical thinking. In fact the higher education has been criticized for not developing the competences specific for professional expertise, which are a necessary requirement in the training of psychologists in Europe today. The present work goes beyond the employment of TBL method mainly in courses regarding healthcare, enriching the small number of studies that used TBL in teaching Psychology.

Methods: Taking part in these study 50 psychology students of a university of the northwester Italy. The study used the qualitative method of the diary. Participants were asked to write a diary about their TBL experience. The content of the diaries was analysed using the qualitative analysis software NVivo.

Results: The topics strictly concerning the team and its functioning, emerged are: team, communication, comparisons with other teams, feelings, group atmosphere, TBL method's strengths, TBL method's weaknesses and evaluation. Participants identified TBL as a positive experience and one, which the university system should employ more in its courses. This experience allowed them, in their opinion, to develop important life skills, like critical thinking. From those findings is possible to affirm that modified TBL is a method much appreciated by students because improve their personal growth. They identified overall positive emotions arising from the TBL experience, especially in relation to their expectations about the result of the final exam. Generally, students appreciate TBL experience: teams are described with a positive impression of teammates, as a place where mutual listening and open and a collaborative atmosphere are experienced.

Conclusion: This study improves the lacking literature about the employment of TBL in psychology classes by qualitative approach.

Keywords: Team based learning; Teamwork; Psychology students; Life skills; Critical thinking; Work groups; Qualitative research.

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Background

From small group to team

Small group work is a learning activity that provides high learner

involvement not easily available during lectures [1]. Personal involvement can increase motivation and interest in the studied subject. Moreover, small groups provide the opportunity to share ideas with others and to contact different perspectives.

A team evolves out of a small group that works together for a period of time and over several sessions [2]. A team is different from a small group because it is characterized by a high level of trust among the members and by a commitment to the welfare of the group. A group becomes a team when the members need spent time interacting together, resources, a task becomes a common goal, and, lastly, they need frequent feedback on performances. If all these conditions are present a team is capable of working effectively and of successfully achieving goals, each member can endure a high level of individual effort and they can challenge each other without taking offence, because they appreciate honest communication [3]. Studies highlight that exist different ways to name small group teaching: learning groups [4], cooperative learning [5], team-based learning [6]. The common idea of those teaching methods is creating small groups with the students of the class in order to enhance a more active and effective learning. Four patterns that teachers are used to employ raise from that idea [3]:

(1) **Casual use:** After some time spent lecturing the class, the teacher gives students some minutes to work together, discussing a question or solving a problem. Then the teacher asks some of them to share the result of their work with the class, explaining their answers. After this the teacher continues to teach the class.

(2) **Cooperative learning:** Generally, is simply based on different group activities relative to the lesson. The structure of the course doesn't change for small group activities, conversely group activities are.

(3) **Team-based learning (TBL):** In this case the structure of the course undergoes a change in order to develop and benefit the elevated performances of learning teams. Working in teams encourages students to engage in a high level of effort in their learning.

(4) **Problem-based learning (PBL):** Is a constructivist approach to education and in which students use case examples to research and apply the recently learned concepts [7].

Team-based learning (TBL)

Team-based learning (TBL) is defined a set of instructional principles designed to promote the effectiveness of lectures on small groups working independently in large classes with high learners [1]. Larry Michaelsen is the father of this approach. He had the idea because he wanted to use classroom time for students to solve the problems they would find in the real world [8]. When students work in small groups, they are required to communicate and learn from each other, becoming actively engaged in the task. They are exposed to perspectives different from their own and, thanks to that, they learn more effectively. When is employed correctly TBL transforms the small groups, because it drives teaching and learning to a new educational meaning.

TBL characteristics

Today universities are increasing the emphasis on group work, in fact TBL is used in 24 countries and in many different disciplines, such medicine [9], business [10], humanities [11] and law [12] and

is beginning to be more utilized in psychology [13-15]. The main learning objective in TBL is that students make practical use of the concepts learned in class to solve problems; it teaches analytical skills through the application of tasks that student teams complete working together [12]. In a TBL course the teacher is a guide who facilitates students working together to apply course material. To facilitate students' learning the teacher use their knowledge and skills to create a course that applies the essential principles of TBL, that are [16]: groups must be properly formed and managed; students must be made accountable for their individual and group work; group assignments must promote both learning and team development; students must get frequent and regular performance feedback. To use TBL the teacher has to redesign his course, following the six steps characterizing TBL experience described in their work by Parmelee, Michaelsen and Cook [17]:

Step 1: Advanced preparation out of class/individual study. Students study the texts indicated by the teacher, to be ready to starting classes and achieve the learning goal identified by the teacher.

Step 2: Individual Readiness Assurance Test (iRAT). In class students must answer to a set of multiple-choice questions individually. The questions are focused on the concepts that student need to know to solve the team application problem.

Step 3: Team Readiness Assurance Test (tRAT). Students must answer to the same set of questions of step 2 as a group, reaching a consensus answer.

Step 4: Teacher Clarification. Students receive clarifications from the instructor on the concepts they have been worked on with during the tRAT. At the end students have to feel equipped to solve more complex problems.

Step 5: Team application (tAPP). Students face with a problem similar to one it will find during their careers. They have to solve it and defend their choices to the class if asked.

Step 6: Appeal. A group can request that the teacher consider an alternative answer to the one chosen as the best, so the group have to explain why their answer is good to be chosen as the best.

Michaelsen, Knight and Fink [18] affirm that at the end of those steps, because of working together, groups become more cohesive, committed to team success, and have learned how to apply the course content to real-life problems. Michaelsen and Sweet [16] sustain that near the course's end, the teacher has to consolidate and extend the students' understanding about the course content and group processes, by encouraging them to reflect on the following aspects: what TBL experience has given them in terms of the course concepts; interaction promoting real teamwork; the value of teams; how some aspects of the course have encouraged positive group norms.

Impacts on learning

Fink [3] claims that the use of small groups in general and, more specifically of TBL, can encourage four kinds of learning. He underlines that the employment of small group activities can help students in the initial understanding of the content and also to enable the learning of the contents by applying them. Furthermore small group activities offer to students many chances to better

understand the content by working on assignments that require them to use their knowledge. Secondly, small group teaching processes provide the opportunity to learn how to apply the course material, by both a qualitative and quantitative increase in their ability: a quantitative rise because of the large amount of time spent on task; a qualitative rise resulting from the ability to solve increasingly difficult problems. This is possible because work in a large group provides more intellectual resources to employ in solving problems, but also because by spending a lot of time together the group becomes more capable of working together as a high-performance team. Finally, grading the group work is an incentive for the teams to spend time and effort in doing their best to produce high quality outcome. The third kind of learning that is enhanced by benefits from small group teaching is the development of team skills; giving feedback about individual and group work makes students aware of the quality of their work, their learning and how well they are working together as a team. Lastly, the use of small groups operates in helping students to understand the value that teamwork can have in solving complex problems.

Enhance critical thinking: a life skill rising from TBL

In 2007 the American Psychological Association (APA) [19] create the Guidelines for the Undergraduate Psychology Major. Those guidelines include critical thinking skills as a valued learning outcome and state that it should be employed along with scientific approach to solve problems related to behaviour and mental processes. The TBL method enhances the thinking of the students who join small groups and transform it from passive to a more critical one. Passive thinkers have a limited and egocentric perspective, whereas critical thinkers formulate clearly the questions and the problems that they raise, collect and value relevant information, use abstract ideas, are open-minded, and communicate effectively. Critical thinking is the capability to integrate, manage and organize complex information and is very important for fostering learning in groups. In higher education the lecture format of learning is widespread: students memorize the material because this method tends to provide a large amount of information whereas the students have a passive role [20]. Active learning, in addition to making the course more enjoyable, enhances critical thinking. Duron et al. [20] developed a five-step model to lead students toward critical thinking. Its phases are very similar to those of TBL: determine learning objectives; teach through questioning; practise before you assess; review, refine and improve; provide feedback and assessment of learning. Looking at this classification it is easy to understand that if these steps are capable of enhancing critical thinking, then so too is TBL, because of the analogy of the steps of both teaching processes. Employing critical thinking students are active, they understand their own perspective more fully, are more interested in events and become fairer [21]. Critical thinking is characterized by realizing the problem, being flexible in ones thinking and without biases, being sceptical, curious, persistent in thinking and researching, being honest, and taking responsibility and risks [22].

The Objectives

The higher education has been criticized for not developing the competences specific for professional expertise that is a necessary requirement in the training of psychologists in Europe today. The TBL method has been introduced because the importance of life skills (critical thinking, problem solving, time management, organizing one's own work, stress management, adjustment to different environments, working in a group, flexibility, being able to have an overview) is increasing. It is important to include in the students' formative curricula these kinds of methods that allow students to develop those skills more. This is the reason because the teaching model has been modified and focused more on students working in small groups rather than lecture classes, using the method of TBL to develop student's skills. The present work goes beyond the employment of TBL method mainly in courses regarding healthcare, enriching the small number of studies that used TBL in teaching Psychology. Furthermore few study use qualitative approach to study this method from student point of view.

The purpose of this to analyse is to examine students' perspective about enhancement of their individual growth [23], critical thinking [24], and life skills by experience TBL method [9], in order to realise which topics are more representative.

Methodology

The modified TBL technique

In the present research students were divided into small groups using the following criteria: gender, residence, curricula of studies (development psychology or community psychology), age, qualification, high school they attended, grade point average of exams. This distribution allowed students to be enriched by the different characteristics and perspectives of each member as reported in the study of Wosnitza and Volet [25]. They affirmed that, in order to function in the most effective way, groups had to be as diverse as possible. In the present work Michaelsen's original method was modified:

Step 1: Students did not have to study before having class, but was the teacher who gave a general indication about the principal concepts of the course of Qualitative Research Methods, namely the different instruments employed in qualitative research.

Step 2: Students had to reflect on the qualitative instrument explained by teacher in step 1 individually, to understand how create it and be ready to discuss about that.

Step 3: Team Readiness Assurance was replaced by an exercise, which each single group made in class, then there was an open class discussion about the topic of the session, during which students tried to answer to the emerged questions. One structured activity was proposed in each TBL session and it consisted in create during classes the instrument of qualitative research introduced by the teacher, i.e. semi-structured interview, EFI (eco-cultural family interview), diary, focus group, participant observation in natural environment, photovoice, audio-tour and video-tour. The presentation of the work of each group to the rest of class and the discussion about it, allowed the teacher to evaluate the level of comprehension of that lesson's topic.

Step 4: Teacher clarification: at the end of each session the teacher clarified the questions emerged during the group discussion.

Step 5: Team application: every group of students chose a problem, that tried to solve using the methods learned during the classes, furthermore they had to answer to some questions made by the teacher, that filled the role of examiner. To evaluate the final exam teacher considered if participants employed the most fitting qualitative method to solve the problem (a research project), the correct answers to the questions about that project asked by the teacher during the group presentation.

Step 6: Appeal. At the end of the exam each group could decide if the grade obtained satisfied them, if not, they could decide to make improvement to their research project and made a new presentation trying to get a higher mark.

Participants

The participants were 50 undergraduate Psychology students (38 female and 12 male, 27,3 years old, in a range of 22-70 years) of a university of the northwestern of Italy, who studied the course of Qualitative Research Methodology.

Measures

The study used a qualitative method of the diary [26]. Participants were asked to write a diary about experience of TBL method. Students had to reflect and write about their personal experiences, their perceptions of personal development and acquired capabilities, their relational skills, of any difficulties they find and also any criticism they have.

The diary method was chosen because it is very suitable for studies that want to explore individual experiences because it enables these to be approached. Being a personal account, it told of the emotions lived during the experience and therefore helped to organize and structure, in narratives, the experiences and reflections of the participants [27]. Using the diary method had the advantages of capturing feelings and thoughts in an accurate and contemporaneous way, but it also had the potential disadvantage of, for example, participants failing to complete the diary or who gave data that was irrelevant to the analysis [28]. Students in class individually complete diaries at the end of each TBL session. They filled in also a socio-demographic record with information such as gender, age, medium point average, and residence.

Procedures

Students took the course of Qualitative Methods following the six steps of modified TBL proposed before. The data collection procedure complied with the Research Ethical Code of the Italian Association of Psychology, the informed consent protocol was provided to the students during the presentation of the research's aims and before the diaries were filled. Students were informed about any aspects of the research that might make them feel they do not want to give their informed consent. Students were reassured that their written production will be used anonymously in compliance with Italian Law on Privacy n.196/2003 and that they will be aggregated with those of the other students.

Data analysis

The content of the diaries was analysed using qualitative analysis software, NVivo 9 [29], based on the Grounded Theory assumptions [30]. One aspect of Grounded Theory was comparative analysis, constantly verified the mutual variability of data and categories [31]. Two independent judges, previously instructed, analysed separately the material and then they met to compare and discuss the categories they identified individually, in order to obtain a common categorisation and analyse it, made the categorization of the diaries.

Results

From the analysis of the contents of the diary emerged central topics that characterized the participant's reflections about their life skills by the TBL experience. Below were the meaningful transcripts of the students whose names were changed to ensure anonymity, furthermore, parenthetical was specified the frequencies and the percentage of the quotations. Firstly, the topics strictly concerning the team and its functioning were reported.

- **Team (21 quotations, 10.3%):** this topic included the reflections that the members of the groups made about the team dynamics and their impressions of their teammates. Participants paid attention to the group dynamics that were enacted during their meetings, in particular the negative ones, for example Carla (female), said: "The various perspectives regarding the final project and the empathy demonstrated between us are really different"; Chiara (female), specified the presence of a person who wanted to be the leader and guide the group: "A person want to be the leader of the group, I am afraid he will cause problems". One more dynamic identified refers to group members who hindered the harmony of the group. Paola (female) suggested: "It is clear that there is a member in the group who doesn't facilitate harmony." In this topic were also mentioned the diarists' impressions about the other members of the group when they meet together; usually these were positive opinions: for example, Stefania (female) said: "They seem motivated people"; Romina (female), said: "It seems an heterogeneous group, but that could work"; Roberto (male) claimed: "They seems welcoming and collaborative people"; only in a few cases the participants declared a negative impression, for example, Silvia (female) said: "At first sight I think I am a part of a team where every member wants to do the bare minimum".
- **Communication (20 quotations, 9.9%):** this was with regard to the participants' perspective about different ways of communicating between group members and their mutual listening during the group work. Participants declared that when they weren't together they communicate by email – this had a positive connotation because it allowed them to go on working after classes or team meetings, even if they were at home. In this way they shared information, and every member could give his contribution to the teamwork in the same file. Alessandra

(female) wrote: "We communicate often by mail to share scientific articles and ideas." Also the communication during the meetings got a positive evaluation, because in most of the cases mutual listening was used. This was much appreciated because each participant feels that the others considered his personal contribution. Sara (female) gave an example: "During the meeting I had many concerns; the other members supported and listened to me and we analysed the points together that I considered weak. It was an opportunity for growth."

- **Comparison with other teams (20 quotations, 9.9%):** participants met with members of other teams during classes and asked about their experience, then they made comparisons with their own team. In particular there were a part of participants that were glad to discover what is better in their team than the others, especially regarding the team's atmosphere, Rita (female) affirmed: "The other group are characterized by a tense atmosphere, whereas, in my team, we are calm and united." But there were also a part few of participants comforted in seeing that other groups had the same problems, usually concerning the team's atmosphere. Claudia (female) said: "I talk with members of other teams, they claim to have relationships difficulties. This comforts me – we are not the only team with this issue".

Secondly the topics concerning the emotional sphere were reported:

- **Feelings (30 quotations, 14.8%):** the emotional topic considered the expectations about the outcome of the teamwork. Participants trust in other team members and expected to get a positive evaluation of their final team project. In this regard Giacomo (male) wrote: "The meeting today was very productive. I'm really happy and I am sure that we will design a good final project"; Chiara (female) affirmed: "I'm proud of me and my team, we are working hard!" Furthermore Sonia (female) wrote: "I feel that finding an achievable research topic has raised everybody's morale. I feel more calm – maybe doing this assignment won't be impossible!"
- **Group atmosphere (25 quotations, 12.3%):** the majority of participants declared themselves enthusiastic about the atmosphere of their team, and were usually collaborative and open to the different contributions. Sandra, female in parenthesis wrote: "The meeting was productive, the listening and the collaboration let us coordinate our work; each member is responsible for the sharing of the assignments; communication is circular. These aspects help me to overcome the initial difficulties". In a few cases, as mentioned before, there had been clashes between members, for example over the lack of accountability, Rosa (female) wrote: "He needs to be goaded and motivated, he is the only man of the team and he is laid back about this. He never answers the group emails." And also Teresa (female) wrote: "He failed to comply with a commitment and does not seem upset." One more reason for the clashes was the excess of zeal, understood as a wish to

impose the individual on all the other members. Valeria (female) said: "Today there was conflict within the team, because a girl feels superior to the others, she thinks that all the members have to do what she says because it is always the right thing." Another member of the same team, Ruggero (male) affirmed: "Because of the attitude of Anna. we all reacted and we got into a conflict."

Below the topics concerning the strengths and weaknesses of the TBL method were identified:

- **TBL method's strengths (32 quotations, 15.8%):** participants evaluated positive aspects of the TBL experience, stating that during the TBL experience they acquired different capabilities working in a group. Simona (female) wrote: "In view of future work in the field of Psychology, I think that it is very useful to learn to share experiences and to cooperate with people different from me"; on designing a project, Alessia (female) claimed: "I discovered how difficult it is to design and carry out a research project"; on knowing themselves better in quality of member of a workgroup, Tina (female) wrote: "I understand better certain aspects of myself that make me feel bad, such: excessive involvement, availability and the fear of being troublesome" and Irene (female) said: "I'm really shy and during the first meeting it wasn't easy for me to introduce my ideas, but gradually I opened up more"; on developing critical thinking, Michela (female) declared: "The diary helps me to reflect on the group and analyse the process that drives toward the finished project." Participants finally identified the strengths of working in a group as the sum of different brains, with different abilities and knowledge that enriched the result of group work. Roberta (female) wrote: "My teammates are very productive and I feel that I want to be productive too. I want to study and research to make my contribution to our team and our project", and Sabrina (female) said: "Each member brings new knowledge, perspectives; the competencies of one member fill the weaknesses of another and vice versa."
- **TBL method's weaknesses (10 quotations, 4.9%):** the one weakness that participants identified in the TBL method concerns logistical problems: organizing meetings with people that came from different and distant parts of the city, it was difficult to ensure the presence of everybody at every meeting because of their personal commitments, Gianluca (male) reported: "The main problems encountered are living in areas distant from each other and the commitments in addition to the university ones – such as job, family – that sometimes make it difficult to schedule the meetings." However, small groups solved this problem thanks to Internet technologies (for example, e-mail) that allowed participants to work remotely even in the case of absence. Barbara (female) suggested: "We communicate by mail; in this way we can also include members who may have been absent from a meeting."

Finally the evaluation that participants made about the experience of working in a team, about their teammates and their final project presented for the exam was reported.

Evaluation (45 quotations, 22.2%): in this category were included: evaluation of the teamwork experience; evaluation of teammates; evaluation of the teamwork. In most cases the teamwork experience was evaluated in a very positive way (40 quotations, 88.9%), was considered an enriching experience, because of the learned skills. For example Serena (female) affirmed: "It was an experience that allowed us to understand our limits and that enriched us"; Clara (female) wrote: "Every time I discover a capability that I don't think I have I understand that I need my team to enrich that." The TBL experience also got a positive evaluation because of the possibility to learn a method that participants would use more at university, Gianni (male) suggested: "The group is a very powerful instrument. I would have used it before and more often." Participants also evaluated their teammates, usually in a positive way. Ambra (female) wrote: "I didn't know my teammates before, but they seem to be people with a desire to engage and willing to listen, as I am". Rarely participants had a negative opinion about the experience (only 5 quotations, 11.1%) and when it happened it was because of the egotistical and overbearing attitude of a member. The final evaluation was on teamwork and usually participants thought they did a good job. Rosa (female) suggested: "I'm satisfied with our teamwork and with the way we faced it together." Expecting to get a good mark, Katia (female) wrote: "I hope to pass the final exam. It was very long and hard work, but stimulating"; Giovanni (male) thought: "The project is excellent, I'm so proud of our work!" Claudia wrote: "All the members worked equally and the final result comes from the engagement of everybody."

Discussion

From the qualitative analysis of the diaries emerge the central topics expressed by the participants who assess TBL a method that should be employed more in the university system, because it allows them to have chance to better understanding the contents of the course and enriching life skills, such critical thinking, they are able to integrate, manage and organize complex information, transforming themselves from passive thinkers to a more critical one [20]. Furthermore students develop team skills, learning how to work in group, to know themselves as member of a group, to meet new people and become friends, to find strategies to communicate with the teammates – even in the case of absence from meetings – so everybody can be informed on the workgroup progress. They identified overall positive emotions and a sense of well-being arising from the TBL experience, especially in relation to their expectations about the result of the final exam. Generally, students appreciate TBL experience: teams are described with a positive impression of teammates, as a place where mutual listening and open and a collaborative atmosphere are experienced, demonstrating that a group become a team when the members spent time interacting together and that the personal involvement can increase motivation and interest in the studied subject. Teach critical thinking is one of the objectives of the TBL method, which is the reason because it employs the discussions in class, in line with the APA guidelines [19] named in the introduction. In fact trying to find the solution to the problems proposed, by active learning, participants improve their critical

thinking skills understanding more fully their own perspective and becoming more skeptical and curious, taking responsibility and risks. Participants also learn to work in a group, understand the value of team work in solving complex problems and to overcome difficulties; an example is the case of the difficulty for each member to be present at every meeting. This problem could be a limitation based on Fink [3], who suggests that it is better that the team works just in class, because it is important that all members are present, otherwise there is a drawback for those who are present, because they have to work harder to regain the lack of contribution of the people that are not present during one TBL session. However there is also a drawback for the absentee who is not updated about the progress of the work. Participants solved this impasse by using e-mail, so they didn't perceive a decrease in the group characteristics of the assignments, contrary to work of Fink [3], where he suggest that is better for a team to work exclusively in class. Furthermore, to fill in a diary could require a large amount of dedication from the writer – having to answer the same question every time may be untenable for some participants [32]. From the results emerges a very positive impression of the participants regarding TBL. Many students felt that this method should be implemented at university. Gianni, declared: "The group is a very powerful tool that I would like to use in the future and beyond." This finding is in line with other research, Vasan, DeFouw, and Compton [33] affirm that the large majority of their sample express positive feelings about working in a team. Kim [34] reports that most students are very satisfied with the contents of the course and also with the TBL format. Zgheib et al. [9] find that students want more TBL courses in the future. These findings and the subtended efficacy can be explained by the improvement of skills [35] like interpersonal skills, professional competencies, effective communication, teamwork, monitoring of group dynamics and the promotion of deeper learning.

The present work go beyond the existing literature firstly because employs TBL, even though a modified version, to psychology students, whereas usually it is applied in health care classes; secondly because contemplates students' perspectives and evaluations; lastly because the positive impression of its beneficiary, that is demonstrated by the low percentage of the negative quotations on TBL's evaluation and its weaknesses. In fact the weaknesses emerged cannot be attributed specifically to TBL method, but to the criteria used to create the team (city where they are living). Those influenced negatively student's perceptions because they cannot interact face-to-face easily.

For the future could be useful to apply TBL method modified or the original one to other courses of Psychology, and in general to promote and extend its use inside the university. Furthermore it could be important to make a quantitative study to verify the benefit of TBL method making a comparison between the performances of students who took the same course with or without the employment of TBL, and if this method will be improved in the university system verify if the general academic performances will be better than the years before, when TBL wasn't used.

References

- 1 Kelly PA, Haidet P, Schneider V, Searle N, Seidel CL, et al. (2005) A comparison of in-class learner engagement across lecture, problem-based learning, and team learning using the STROBE classroom observation tool. *Teach Learn Med* 17: 112-118.
- 2 McMahon KK (2010) Team-based learning, in Jeffries WB, Huggett K (Eds), *An introduction to medical teaching*, 55-64, Springer, London, United Kingdom.
- 3 Fink LD (2004) Beyond small groups: Harnessing the extraordinary power of learning teams, in Michaelsen LK, Knight AB, Fink L (Eds), *Team-based learning: A transformative use of small groups in college teaching*, 3-26, Stylus Publishing, Sterling, VA, United States.
- 4 Bogenrieder IM, Nooteboom B (2004) Learning groups: What types are there? *Organization Studies* 25: 287-313.
- 5 Millis BJ, Cottel PG (1998) *Cooperative learning for higher education teacher*. Oryx Press, Phoenix, United States.
- 6 Michaelsen LK (1983) Team learning in large classes. *NDTL* 14: 13-22.
- 7 Beers GW (2005) The effect of teaching method on objective test scores: problem-based learning versus lecture. *J Nurs Educ* 44: 305-309.
- 8 Michaelsen LK, Parmelee DX, McMahon KK, Levine RE (2007) Team-based learning in health professions education. Stylus Publishing, Sterling, VA, United States.
- 9 Zgheib NK, Simaan JA, Sabra R (2010) Using team-based learning to teach pharmacology to second year medical students improves student performance. *Med Teach* 32: 130-135.
- 10 Michaelsen LK, Watson WE, Black RH (1989) A realistic test of individual versus group consensus decision making. *J Appl Psychol* 74: 834-839.
- 11 Coleman H (2012) Using team-based learning to meet the APA's recommendations for undergraduate psychology education, in Sweet, M Michaelsen L, *Team-based learning in the social sciences and humanities: Group work that works to generate critical thinking and engage*, 221-234, Stylus Publishing, Sterling, VA, United States.
- 12 Sparrow SM, McCabe MS (2012) *Team-based learning in law*. Espresso, United States.
- 13 Haberyan A (2007) Team-based learning in an industrial/organizational psychology course. *North Am J Psychol* 9: 143-152.
- 14 Jacobsen KV, McIlreavy M, Marrs S (2014) Team-based learning: The importance of attendance. *PLAT* 13: 25-31.
- 15 Marrs S (2011) Increasing learner engagement with team-based learning. In Miller RL, Amsel E, Kowalewsky BM, Beins BC, Keith KD, et al. (Eds), *Promoting Students Engagement*, *Soc Teach Psychol* 1:185-191.
- 16 Michaelsen LK, Sweet M (2008) The essential elements of team-based learning. *NDTL* 116: 7-27.
- 17 Parmelee D, Michaelsen LK, Cook S, Hudes PD (2012) Team-based learning: a practical guide: AMEE guide no. 65. *Med Teach* 34: 275-287.
- 18 Michaelsen LK, Knight AB, Fink LD (2004) *Team-based learning: A transformative use of small groups in college teaching*. Stylus Publishing, Sterling, VA, United States.
- 19 American Psychological Association (2007) *APA guidelines for the undergraduate psychology major*. Washington, DC, United States.
- 20 Duron R, Limbach B, Waugh W (2006) Critical thinking framework for any discipline. *IJTLHE* 17: 160-166.
- 21 Connerly D. (2006) Teaching critical thinking skills to fourth grade teaching students identified as gifted and talented. Graceland University, Iowa, United States.
- 22 Anderson T, Rourke L, Garrison DR, Archer W (2001) Assessing teaching presence in a computer conferencing context. *JALN* 5: 1-17.
- 23 Letassy N, Medina M, Stroup J, Fugate S, Britton M (2007) The impact of team-based learning (TBL) on student and course outcomes compared lecture methods. Paper presented at the annual meeting for the American Association of College of Pharmacy, Florida, United States.
- 24 Barber P (2003) Critical analysis of psychological research II: delivering a course for inclusion in the core curriculum for psychology. *PLAT*, 3: 15-26.
- 25 Wosnitza M, Volet S (2012) Group heterogeneity and homogeneity in personal content goals for a group learning activity: Impact on individual appraisal. *Appl. Psychol*, 61: 585-604.
- 26 Gershuny J, Sullivan O (1998) The sociological use of time-use diary analysis. *Eur Sociol Rev* 14: 69-85.
- 27 Kaun A (2010) Open-ended online diaries: Capturing life as it is narrated. *Int J Qual Methods* 9: 133-147.
- 28 Bedwell C, McGowan L, Lavender T (2012) Using diaries to explore midwives' experiences in intrapartum care: an evaluation of the method in a phenomenological study. *Midwifery* 28: 150-155.
- 29 NVivo 9 (2010) *Qualitative data analysis software*. QSR International, Pty Ltd, version 9.
- 30 Heppner PP, Heppner MJ (2004) *Writing and publishing your thesis, dissertation, and research: A guide for students in the helping professions* Thompson Brooks/Cole, Belmont, CA, United States.
- 31 Creswell JW (2006) *Qualitative inquiry and research design: choosing among five approaches*. Sage Publication, Oakley, CA, United States.
- 32 Bolger N, Davis A, Rafaeli E (2003) Diary methods: capturing life as it is lived. *Annu Rev Psychol* 54: 579-616.
- 33 Vasan NS, DeFouw DO, Compton S (2009) A survey of student perceptions of team-based learning in anatomy curriculum: favorable views unrelated to grades. *Anat Sci Educ* 2: 150-155.
- 34 Kim S Y (2008) Students' evaluation of a team-based course on research and publication ethics: Attitude change in medical school graduate students. *JEEHP* 5: 1- 3.
- 35 Bravo R, Lucia-Palacio L, Martin MJ (2014) Processes and outcomes in student teamwork. An empirical study in a marketing subject. *Stud High Educ* 1: 1-19.