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A digital positive youth development game for promotion of integrity in a digital world

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Abstract: Early adolescents are often influenced by their peers to engage in risky behaviors which include deceptive behavior in families and schools. Lying has been studied for centuries and is usually seen not a serious problem unless it becomes habitual, compulsive, remorseless, or when it is complicated by the co-occurrence of other risky behaviors such as skipping school or forgery. From the preventive perspective, we can strengthen adolescents' moral and social competences through game-based learning (GBL) and positive youth development (PYD). A digital PYD game is designed to attract and engage adolescents in examining and experimenting consequences of deceptive behavior in a non-threatening and manner. It aims at promoting moral decision making through simulations and extensive feedback. It is available for free use as an electronic teaching and learning resource. This paper reviews relevant literature, followed by a brief description on the game design, and its relationship to the Project P.A.T.H.S. which is recognized as an evidence-based prevention program by the World Health Organization (1). Two respondents from different gender, age, education, and cultural backgrounds were invited to play the game and give comments on their experiences. Based on the users' feedback and the literature, a discussion on how to make the best use of the game together with the related curriculum units for primary and secondary prevention is presented.

Keywords: Prevention, positive youth development, digital game-based learning, moral competence, social competence

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Introduction

Lying is common misbehavior for students. Most parents think that their children lie to get or avoid something they want or do not want to do. Children may develop unfavorable mindset and attitude when telling lies becomes habitual through reinforcement and observations of the consequences of lying (2,3). In schools, students sometimes tell lies to their teachers and school prefects (4,5). The issue is getting more serious in the digital era (6). According to a survey in 2009 (7), lying about being ill to skip school or work is one of the ten most common forms of misbehavior of youths in Hong Kong. Lying behavior becomes a major concern when it is accompanied with other risky behaviors such as skipping school or forgery. In a digital world when most adolescents are connected through digital means, the issue of lying will easily become complicated as the problem may magnify as it goes on-line. The issue may even lead to bullying and cyberbullying (BCB) because skipping school and forgery are considered as major deviant behaviors and could become excuses for blackmail. Importantly, however, making use of the very same social learning process to reinforce normative and prosocial behavior among early adolescents should be promoted. Against this background, a digital positive youth development game is designed and developed.

Literature review

Lying refers to a person making a false statement with the intention to deceive others (8,9). When toddlers (ages 2 to 3) engage in pretend play, they start to develop the ability to make factually untrue statements (10). As children grow older (3-8 years), making a false statement involves executive functioning and conceptual moral understanding abilities. Recent theory-of-mind research postulates that there are first- and second-order belief understandings (11). The initial false denials of a child are associated with his/her inhibitory control and the first-order belief understanding, while the maintenance of false statements is associated with his/her second-order belief understanding (12). On top of executive functioning, conceptual moral understanding and theory-of-mind understanding, other social and cognitive correlates of young children's lying behavior include age, intellectual and language abilities, parenting and disciplinary styles, as well as cultural contexts (3,13-15).

During middle childhood (ages 9-12 years), children tend to lie more than those in early childhood (16). Since the lying behaviors are more cognitively demanding than telling the truth, the lie error rate for children declined with age (16).

Adolescents have the highest lying frequency among all age groups (16). The sophistication of lies is closely associated with adolescents' executive functioning skills (17). Deception is moderately correlated with parenting styles, parent-child relationship, and behavioral and emotional problems of adolescents (5,18). Early adolescents usually lie to their parents but seldom to their friends (5). According to Cumsille and colleagues (19), parental warmth is negatively correlated with adolescents' lying. It was found that a better parent-

adolescent relationship is associated with less lying as youths with close relationships with their parents will have less need to lie (20). Moreover, poor relationships with parents may reinforce adolescents to involve with peers who tend to engage in deviant behaviors and increase the propensity to tell lies (21).

Peer cluster theory

Numerous studies have identified contributions of friendship to a child's social, moral, emotional and cognitive development through perspective taking, cognitive flexibility, conformity to desirable social norms, resistance to peer group pressure, making close friends, as well as learning through vicarious experiences and verbal persuasion. The processes of peer influence and peer pressure are not easy to delineate and more often confusing and ambiguous (22). Many youth work experts suggested studying peer pressure and peer influence by peer cluster theory (23). The theory examines the interactive process that affects youth decision making, conformity to norms, and acquisition of deviant values. When a teenager is asked by a friend to do some inappropriate things, he or she may conform in order to maintain the friendship and thereby making mistakes together. Therefore, the conflict between maintaining friendship and integrity is worthy of reflection and learning. Peer pressure happens when an individual or a peer group encourages others to change their values, attitudes, or behaviors in order to conform to those of the influencing individual or group. Peer pressure may become a sufficient condition for the onset of bullying behavior if an individual refuses to follow.

Integrity

In order to obtain the acceptance by peers and to maintain a social position within the peer group, adolescents are often influenced by their peers to engage in behaviors that were reinforced to conform to the expectation of a social group (24). When adolescents were asked to do inappropriate things that contradict with their personal values and beliefs, the decisions and adjustment of following their moral integrity are vital in maintaining their interpersonal relationships, and as a result of self-awareness in response to the circumstances. Taking responsibility and maintaining honesty to oneself allows the person to understand and view the full picture of the situation that untangle the misunderstanding and promote strong moral principles.

From a positive view, usually, adolescents can differentiate socially desirable and undesirable behaviors. In a study, some vignettes showing internalizing and externalizing behavior problems were shown to adolescents for them to rate. It was found that adolescents could recognize the behavior problems of vignette characters and they are likely to approach and like those who did not reveal any problem than those who showed externalized behavior problems. (25).

From Isolation to victimization

To be independent honest to oneself requires lots of competencies and support. Being isolated is an important risk factor for being bullied. Despite the fact that all bullies were disliked, social status and feelings of rejections and humiliation are strongly related to aggressive behavior, suggesting an adolescent's social status may affect his/her tendency in doing aggressive and bullying perpetration behavior (26-28). Bullying perpetration is constant aggressive behavior towards a person or a group of people. Olweus (29) defined bullying perpetration as, 1) repetition – it occurs repeatedly, and 2) a power imbalance happened so that the victim cannot

protect him/herself. Stein, Dukes and Warren (30) later added a criterion, 3) negative or malicious behavior intended to harm or distress. For adolescents who are bullies, Salmivalli (31) revealed a dominance hypothesis for the occurrence of bullying, in which they are driven by a desire for dominant status in the peer group. The leader can feel rewarded when their followers and reinforcers support their actions, especially when the majority of bystanders remain in a passive state. A similar pattern of the reaction was observed among children in Canadian playgrounds (32). The prevalence of misbehavior was elevated among adolescents who reported one negative life event and more markedly elevated for those reported more than one negative event (33). Another reason that can be attributed to taking the side of bullies is concerns of peer rejection, which is known to peak during the adolescent years (34). For victims of bullying, research has found that the youth of ethnic minority backgrounds were more likely to get picked up due to the fact that they didn't have any distinct group to join, and with the same reason, they seldom have a group for their identity (30). Both bullies and victims scored lower on subjective well-being than those not involved in any bullying perpetration events (35). They are also positively related to internalizing problems across culture and time (36).

When facing risks and threats from social circles, support from family members often plays a critical role in protecting adolescents from bullying experiences. Family relationships were found to be mediated through adolescents' susceptibility to peer pressure, including school misbehavior (37). Parental support and warmth showed significant negative associations with adolescents' misbehavior, which suggested adolescent attachment to parents is able to influence children's behavior when parents are physically absent (33). The overall misbehavior was also four times less prevalent among adolescents in the quartile of reporting most teacher support compared to the quartile reporting least teacher support. Talking to friends for quality communication and perceived peer support were also negatively correlated with bullying perpetration or bullying victimization experiences (36), particularly for adolescent girls that are more likely than boys to turn to peers for support.

From a study that focused on coping strategies to bullying experiences, the five most frequently used strategies were to confide in somebody, ignore the behaviors, to support yourself, to get away from the bullies, and build up your social circles. (38). Some non-assertive strategies, such as crying, were commonly less efficient in tackling the issue than actively seeking help behaviors. Most frequent solutions suggested were seeking support from the school, and it is often recommended in schools (39).

For prevention and intervention strategies, it is important to understand that even research findings have shown social support from teachers, parents, and peers have negative relationships with adolescents' misbehavior at school, there is always limitations and capacity for each side to support and respond proactively. Each party should bear equal responsibility in bringing quality communication and interdisciplinary networking to support adolescents in responding to crisis and implanting appropriate reaction to threats that bought by their social circles.

Positive youth development

Adolescents may find that some peer expectations conflict with their personal needs and values. However, in order not to lose their friends in a rather favorable cluster, they may feel uneasy to refuse which is a very important life skill of social competence. They may conform to inappropriate acts and even join risky behaviors. To resist peer pressure, adolescents need to be equipped with positive youth development (PYD) constructs (40) which include social,

emotional, moral, cognitive, and behavioral competencies, clear and positive identity, self-determination, self-efficacy, beliefs in the future, bonding, resilience, spirituality, prosocial norms, and pros-social involvement. These 14 PYD constructs, together with recognition for positive behavior, are recognized as crucial constructs for any PYD programs.

Friendship

Friendship is an important part in the social and emotional developmental stage for adolescents during the period of transition between childhood and adulthood. A perceived higher level of friendship quality can bring adolescents to have a higher level of self-worth and social competence (41). Patterson, Bettini, and Nussbaum (42) identified nine definitional clusters of friendship conceptualization across the life-span, including devotion, commonality, reciprocity, relational stratification, frequent contact, positive attributions, positive impact, understanding, and familial comparison. Friendships allow adolescents to gain social support, learn to get along with others, acquire knowledge and self-esteem, and strengthen social competence (43). In adolescence, agreeableness, which is characterized by traits as cooperative, friendly, considerate, and helpful, is associated with better interpersonal adjustment and more harmonious conflict resolution.

Promotion of Bonding

There are many ways to build up bonding with good friends at school. They include the promotion of physical and psychological safety, the establishment of appropriate structure that promotes bonding, cultivation of supportive and intimate relationships, creating opportunities to belong, promotion of positive social norms, support for efficacy, and provision of opportunities for skill-building (44).

The structural cognitive theories of morality

The structural cognitive theories of morality denoted the process of how individuals reason and judge their own behaviors when faced with moral dilemma issue during their active participation in engaging activities. Following the tradition of structural developmental theorists (e.g. 45-48), Bredemeier and Shields (49) posited the example of sportspersons were actively interpreting their morality by interacting with others and making judgements on appropriate behaviors. Moral constructs, reasoning, and judgements became some of the important learning in sports participation and the same as in many engaging interactive games.

Another important concept “Ethos” (50) denotes the nature and characteristic of every unique participation that may govern the behavioral and cognitive aspects of all participants differently. Friendship, acceptance by peers and risks facing among peers are some of the vivid examples that will generate different ethos for adolescents to construe with when their integrity, honesty, and moral reasoning are being challenged. These processes of active construing the meaning of their own unique physical and mental participation echo the way for an agentic understanding (51) of the social cognitive theory of morality. The following examples illustrate adolescents are not passive recipients of their situations; they are actively interpreting how to exercise their moral will and desire. The dilemmas of making fair decisions, maintaining honesty, and upholding integrity will engender consequences, be it intentional or accidental.

Digital game-based learning (DGBL)

Prensky (52) observed that people respond more effectively to fun, speed, and graphics and wrote the first book of digital game-based learning. He defined digital game-based learning as the combination of serious learning with fast-paced video-games that provides interactive entertainment. Since then, there is a growing interest in the use of digital game-based learning (DGBL) (53) in formal education (54), socio-emotional learning (SEL), mental health (55), and PYD (56). Moreover, educational games facilitate the acquisition of procedural knowledge and the occurrence of a higher level of cognitive process (57).

From the preventive perspective, we can strengthen adolescents' moral and social competences through digital game-based learning (DGBL). A positive youth development (PYD) electronic educational game is designed to attract and engage adolescents in examining and experimenting the consequences of dishonest behavior in a non-threatening and manner.

This digital positive youth development (DPYD) game is designed to allow players to experience the natural consequences of being invited to engage in dishonest behaviors. Simulating the reality, players face temptations of breaking school rules as lured by peers through new media via smartphone in a school setting and through on-line connections. The issues reflect a need for strengthening moral competence and media literacy.

In this game, honesty is regarded as good behaviors consistent with one's own inner consciousness, resulted from a full self-awareness which is not copied or being forced from outside. Players are given choices to conform or to refuse in different scenarios when the story develops. Players make choices which represent their perceptions of the importance of honesty and sincere confession as well as their willingness to conform to the peer pressure. Players experience the consequence of their choices as the game continues. Moreover, it also introduces solutions when facing threats from classmates and simulation scenarios relating to forgiveness.

A digital game

The game, "The integrity crisis," was designed for Secondary 1 to 3 (Grades 7-9) students. The story develops in and outside of campus. It describes how the character handles interpersonal conflicts when her or his privacy is invaded by classmates. The story has different scenarios in which the player is required to make a choice from six responses representing various ways of handling the conflict. The story will end differently according to the players' choices. The game takes about 10 to 15 minutes to complete, depending on the reading ability and attitude of the player. Both the male and female versions are available.



Figure 1. An image captured from the screen of the game



Figure 2. An image captured from the screen of the game

The teaching material mainly explores the choice between friendship and honesty, emphasizing the importance of honest and sincere confessions, and it allows students to experience the consequences of dishonesty. Honesty is defined as behaving consistently with one's own inner consciousness, where one is fully self-aware, and the resulting behaviors are not copied nor being forced from the outside. In addition, it also allows students to decide on different solutions or reactions when facing threats from classmates, which highlights the issues of forgiveness. Both male and female versions are available.

Friendship is an important element in the lives of adolescents. When a teenager is asked by a friend to do inappropriate things, he or she may blindly follow in order to maintain the friendship and possibly making mistakes together. Hence, the choice between friendship and integrity is worthy of reflection and learning, which is the key message of this game.

Objectives of the game

The purposes of this game can be separated into three different aspects: cognitive, emotional, and behavioral. On the “cognitive” aspect, the game allows students to reflect on the choice between friendship and honesty. Is maintaining a friendship more important or confessing one’s faults with the possibility of putting a tear in the friendship? It helps students understand the necessity of a sincere confession. Confessing allows one or more parties to understand the full picture of the situation, which can clear out any misunderstandings and apologize, so all parties can analyze the situation rationally to work out the best solution. The game can also increase students’ awareness of the different ways of handling threats from classmates through the choices they personally make in the game, as well as the different options they can choose from. It is important to stress that students always have a choice, and the outcome of the situation changes according to their response.

On the “emotional” aspect, the game allows students to put themselves in the character’s shoes as if what they are experiencing is happening in real life. Students can change from understanding the victim’s plight, to caring for the victim, and to showing compassion for the victim’s pain and negative emotions. This enables students to feel pity, sympathy, and empathy respectively in those situations described above.

On the “behavioral” aspect, the game allows students to perform drills through different scenarios, to prepare them for real life if similar situations were to arise and to find out what actions they would potentially take. This enables students to consciously practice honest behaviors, refuse to perform inappropriate behaviors, and take appropriate actions in the face of frauds or extortions. On top of that, they can also do good deeds for their friends, proactively admit one’s fault, and forgive a friend’s wrongdoings.

Game design

The first level feedback provides general guidance on the incident based on students’ choices during the early phase of the story (the player hesitates to follow a friend’s idea of modifying a school notice) and toward the ending (10th, 11th, episodes where the character faces the unreasonable threat of the class representative). The second level feedback targets students’ strategies in handling conflicts while the third level feedback shows the calculated scores of the 20 positive psychological constructs of the player, which will be discussed in another paper of this special issue.

Storyline

A classmate Bruce/Carol invites the player to forge a school notice together in order to skip participating in a two-day life planning camp and join other classmates for other leisure activities. The character hesitates at first but eventually joins the forgery and faces the risk to be punished for violations of school rules. The forgery is discovered by the class representative who later keeps asking for money to cover up. The theme of the game is related to how the player makes his/her decision when facing the pressures from the classmates in various scenarios as the story develops.

Tips for instructors

Instructors need to familiarize themselves with the objectives, design, and storyline of the game. One of the key teaching points is making choices and maintaining one’s integrity. Class

discussion on how students make a choice and their sharing of the experiences could illicit interests for the topic. Discussions on following rules and do the right thing versus breaking rules to fulfil one's desires or wishes, act or remain silent when threatened, agreeing with friends to do mischievous things or follow one's conscience could, on one hand, stimulate students' discussion, and on the other hand, gives the instructors some ideas of what students have experienced in real lives regarding those issues. Instructors should be sensitive about students' disclosure of their personal experiences, which can cause upsetting emotions. Reminding students to respect one another's disclosure for the sake of learning from one another, and students should not tease or tell others what their classmates have said in the sharing.

Related teaching units for this game

Prosocial involvement (PI), resilience (RE), moral (MC) and social competences (SC) are the core PYD constructs for this game. Anti-bullying (AB) is a major developmental issue. There are five related teaching units in the original and revamped program of the Project P.A.T.H.S. launched in 2006 and 2009 respectively – MC3.4 “The Stolen PIN”, SC3.4/AB3.2 “Alien”, PI1.2/AB1.2 “Behind the Mask of Bullying”, RE1.3/AB1.3 “A Secret Book of Bullying Prevention”, and PN2.4/AB2.1: “I can make a Difference”. The last two units will be presented in another paper on the game to prevent bullying and cyberbullying. The concept maps of all teaching units can be accessed through the P.A.T.H.S. website <https://www.P.A.T.H.S..hk/en/>. Table 1 shows the three most relevant units which will be described in detail below.

Table 1. The three most relevant teaching units

Game	Issue	Construct(s)	Unit(s)
The Integrity Crisis	Honesty, isolation caused by bullying	Moral Competence (MC)	MC 3.4: “The Stolen PIN”
		Social Competence (SC)	SC3.4/AB3.2: “Alien”
		Prosocial Involvement (PI)	PI1.2/AB1.2: “Behind the mask of bullying”

Concept maps of all teaching units can be found in the special teaching units except for MC3.4, which are updated teaching units of the teaching materials of the Project P.A.T.H.S. This game and the other game “the Bullying Storm” share some of the teaching units under the theme of anti-bullying (AB). They are summarized in the following table. For all concept maps, please visit

<http://www.cityu.edu.hk/ss/pltr/ty/new/en/enter.html> (Flash Player required)

Unit MC3.4 “The Stolen PIN”

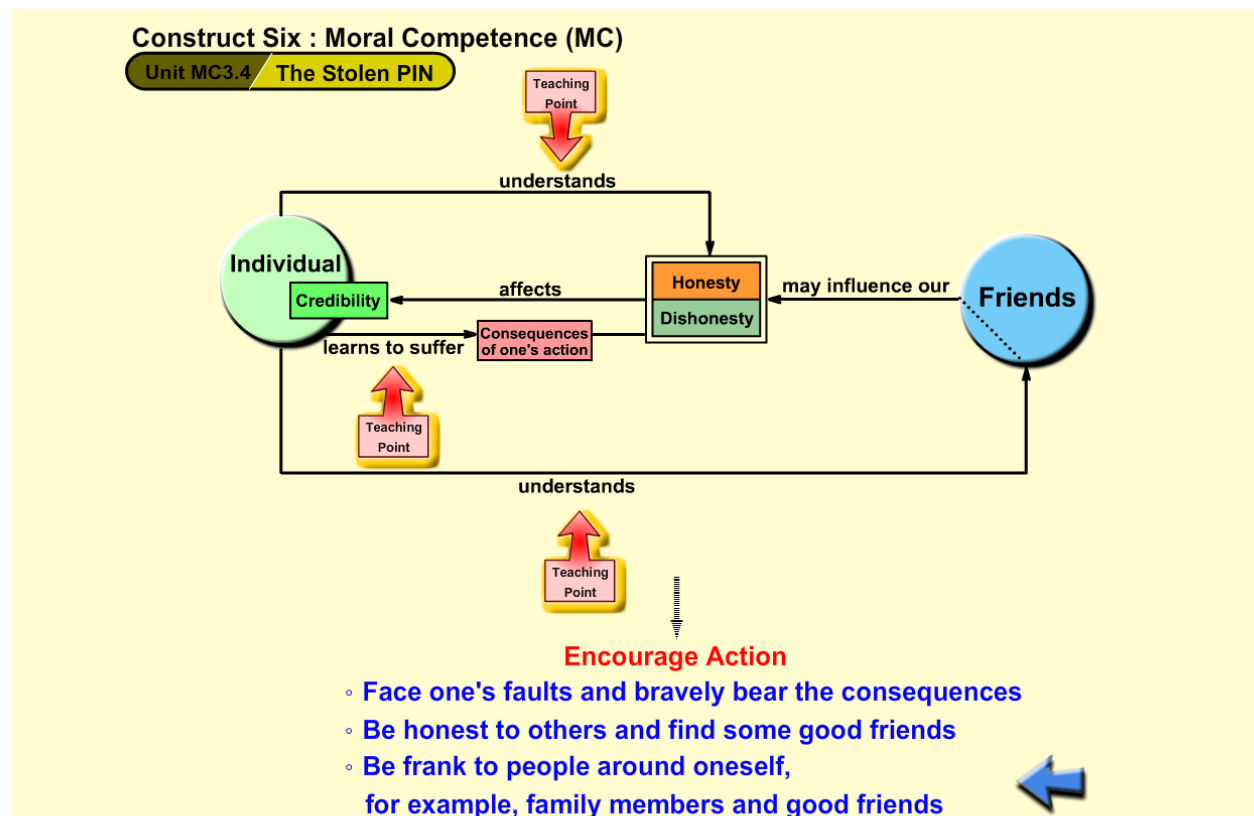


Figure 3. The concept map of the teaching unit MC3.4

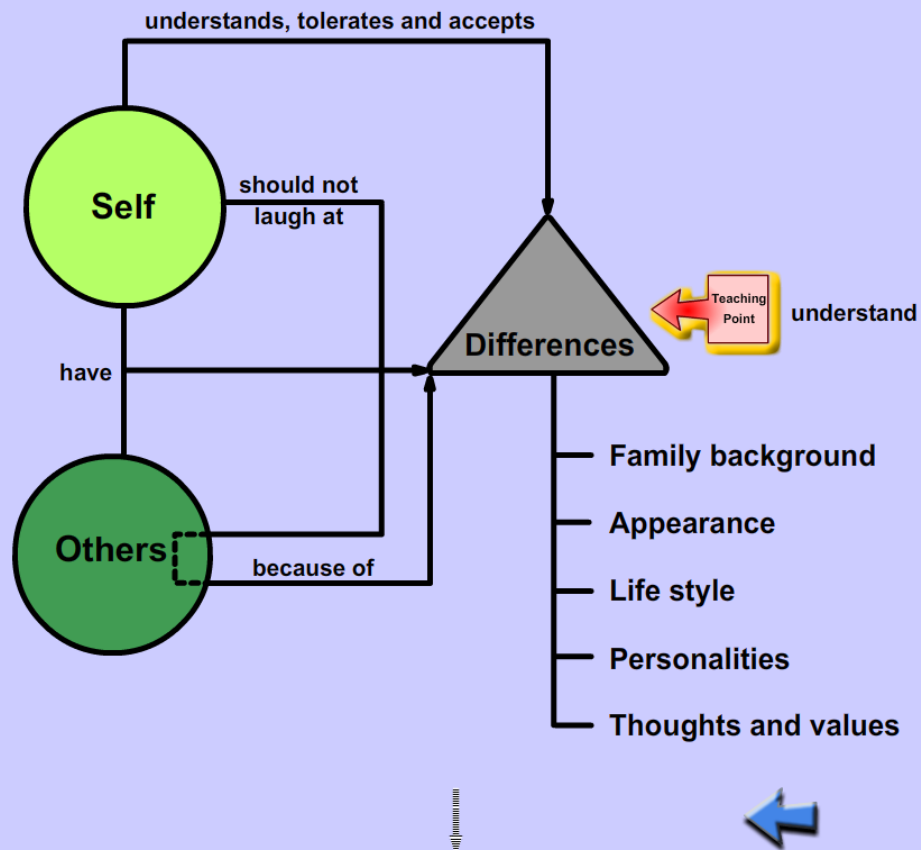
Teaching points

The construct for this unit is resilience (RE). In this unit, individuals understand that the interrelationship between honesty and credibility. The more honest one behaves, the more credible he or she is, vice versa. Individuals also realize that peers play an important role in influencing their behaviors of honesty and dishonesty, which indirectly affects their level of credibility as well. Lastly, they learn to suffer the consequences when performing actions of dishonesty.

Instructors should encourage individuals to be honest with others and find some good friends. Having friends with a positive and upright character, they would eventually develop these characteristics, such as being frank to people around themselves. In the face of issues on being dishonest, they are confident to face their faults and bravely bear the consequences.

Construct Two: Social Competence (SC)

Unit SC3.4 / Alien? / Unit AB3.2



Encourage Action

- Stop discriminating or teasing others who are different from us in aspects such as studies, behaviors, psychological and social interactions
- Encourage those who are being bullied or teased to do what they should do
- Respect and appreciate individual differences
- Be dispassionate when being teased, use a firm attitude to let the bully understand that individual differences are natural
- Never look down on others, be confident that one can influence others

Figure 4. The concept map of the teaching unit SC3.4/AB3.2

Teaching points

The construct for this unit is social competence (SC). Everyone is unique and we need to realize the difference between each other. Many factors contribute to those differences such as family background, appearance, lifestyle, personalities, and individual’s thoughts and values. Thus, one should not tease or make fun of others because of those differences. Instead, we should try to understand the differences, and learn to tolerate and accept others as different from us.

Instructors should focus on discussing the differences and what makes everyone unique with students.

We should encourage respect, understanding, and tolerance; and condemn discrimination, teasing behaviors, bullying incidents. There are lots of differences one can pick from their classmates such as behaviors, studies, and how one interacts with others, but we need to learn to respect and appreciate individual differences. When faced with bullies, one should be dispassionate when being teased and use a firm attitude to let the bully understand that individual differences are part of nature. We should never look down on others because of our differences. Instead, instructors should remind students that they can make a difference and influence others to take proper actions.

Unit P11.2/AB1.2 “Behind the Mask of Bullying”

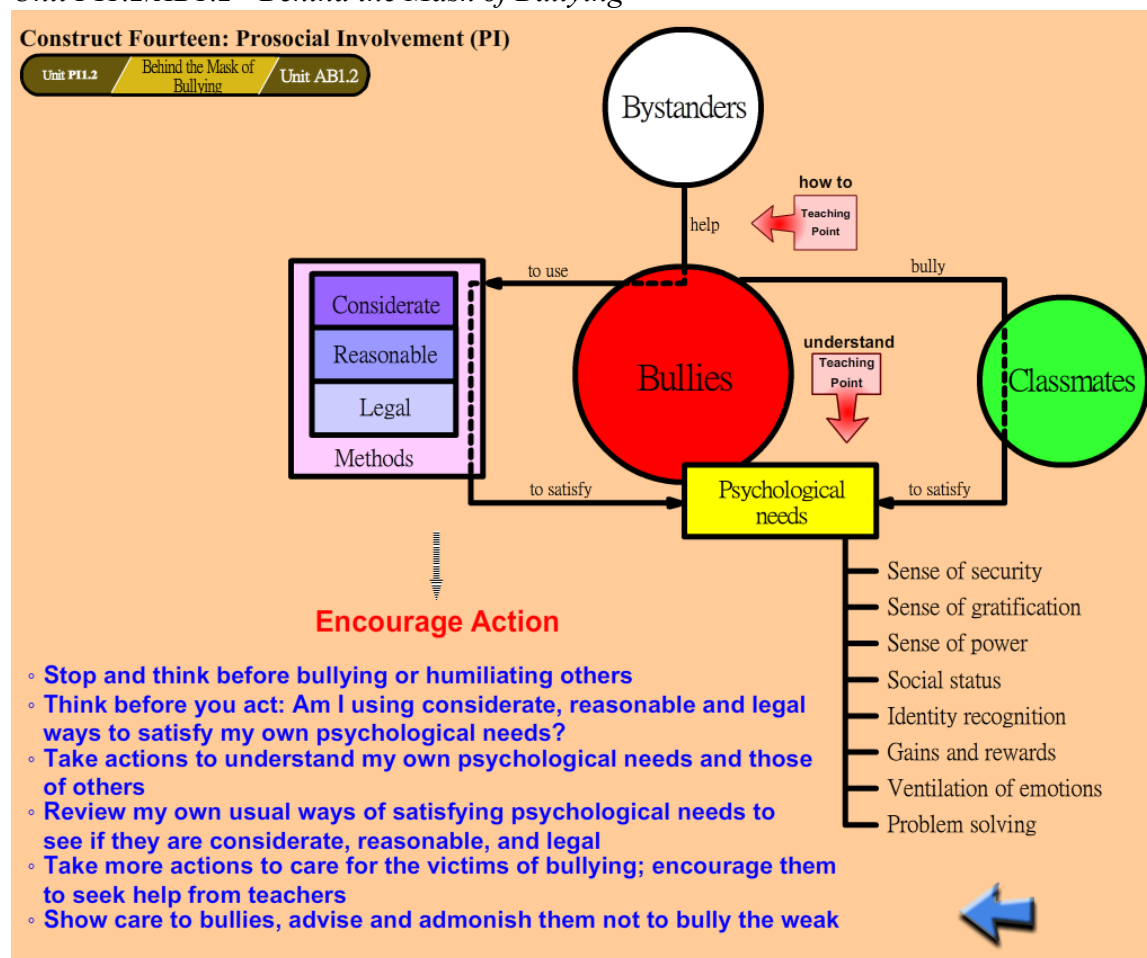


Figure 5. The concept map of the teaching unit P11.2/AB1.2

Teaching points

The construct for this unit is prosocial involvement (PI). This unit explores the mindset of bullies in a bullying incident. Usually, bullies bully their classmates in order to satisfy their psychological needs, including having a sense of security, sense of gratification, sense of power, a higher social status, better recognition of identity, a favor of gains and rewards, ventilating their emotions, as well as solving their own problems. It's crucial for bullies to understand that

their actions initially do not intend to hurt others, but it's a maladaptive approach in response to their inner issues. Besides, bystanders can help bullies by using considerate, responsible and legal methods to respond to their psychological needs. From time to time, bullies learn to express themselves in an appropriate and acceptable way.

Instructors should encourage individuals to think before performing bullying or humiliating actions, again stressing on the use of considerate, responsible and legal measures to satisfy individuals' psychological needs. Moreover, concrete actions ought to be taken to understand the psychological needs of bullies and those of others, such as doing personal reflection and review on their interpersonal skills, caring for victims and bullies' inner needs, fostering help-seeking behaviors from trust-worthy people (e.g. teachers), advising and admonishing bullies not to bully the weak.

Concluding remarks

Everyone treasures friendship in our lives and students need to be careful when handling the relationship with friends. It is understandable that peer pressure is not easy to resist. During the adolescence stage, peer plays an elevated role and occupies a large proportion of their lives. Informed by the peer cluster theory, we come to figure out why many prevention and educational programs failed to compete with youth's original environment, in which the norming influences of peer clusters eliminate the gainful learning experiences (22,58-59). This interactive game shows how peer influences challenge adolescents' honesty and integrity. The lively issues engender thought-provoking process; given appropriate time to think and experience the possibility of alternative decisions. They are real-life examples of viable solutions which are seldom available in their own peer interaction. The process of provision of proper guidance, coaching, and accurate information may be able to elevate certain alternatives way to counter-influence peer cluster pressure. It is hoped that participants could be well equipped and informed to choose wisely when faced with situations they have to make a choice, bearing in mind the importance of honesty and integrity.

User feedback -- Personal reflection

Below is the written feedback of a female aged 15 who studies in an international school in Shanghai, China. Parental consent to play the game and publish her views was obtained.

“After playing this game, I realized how difficult it might be to say no to friends. It is one case to disagree with what someone you dislike is doing, but it is much harder to say no to friends because you value their opinion of you. Additionally, after trying out different options for the ending, I also learned that how you choose to communicate with your friend will have a large impact on how long the friendship will last. If you really value a person's integrity and loyalty, Carol's betrayal of you may not mean that you want her as a friend. However, you can still try to keep things neutral and avoid an altercation or fight. Overall, this game/simulation also reinforced the idea that breaking the rules has consequences, but if the main 'rule-breaking' has happened already, consequences can be minimized by acting responsibly and contacting an adult when no previous strategies have worked.”

A 19-year old student studying at a college in the US. wrote:

“There was no option in the game to reject Bruce’s idea in early stages. Personally, I would have firmly said no. I believe the expectation was that it was very hard to say no to Bruce. I liked there were different endings, depending on how you resolved your disputes with Bruce. You would either be able to mend or destroy your relationship with Bruce. However, it should be emphasized that how to approach friendships and relationships are nuanced. There could be a middle ground between different options. There is no one right answer.”

Discussion

The peer cluster theory has helped us understand the operationalization of peer influence and the pressure a favored peer cluster will have on youth’s non-conforming behaviours. Young people are prone to be influenced by peers. The theory sheds light on the understanding of why providing information alone is ineffective for treating adolescent misbehaviour. For primary prevention, the learning gained from educational programs cannot withstand the peer influence engendering from their favor clusters. The complexity of many integrity issues and moral developmental examples of violation of school rules, like fraudulence and victimization, and having secondary deviance because of differential association and being further labelled are just many of vivid challenges in adolescents’ daily life.

The game has several contributions. First, it provides knowledge and skills in handling peer pressure. Second, it offers choices that players can learn vicariously. Third, it creates chances of cooperative learning that encourages open discussion and support rather than competition and didactical communication. The game design may maximize the positive effects of the reciprocal relationship among peers which is the essence of secondary prevention.

Cooperative learning provides the quintessential way to counter-influence peer cluster pressure since the adult facilitator will remain neutral and distant, not providing the orthodox answer, nor responding with reckless comments. This facilitative stance may facilitate adolescents to seek their own answers from an active learning process. The other major contribution to cooperative learning is the notion of awaiting and motivating the readiness of adolescents. Adults often look for quick measures and are easily losing the patience to allow young people the time of contemplation, deliberation, and making fair decisions. This helps explain why the learning processes in sharing of ideas and viewpoints may help explore identity and encourage adolescents to exchange diversified interactions to curtail some risk factors for engaging in cyberbullying (60). The elements among this gaming cooperative learning consists of considering individual accountability during challenging situations, face-to-face interaction (internet communication) to reveal one’s own decision making, positive interdependence thinking through the empathetic reflection to the plight of others, and finally, the essential social skills acquisition, which will be crucial for moral decision making and integrity building (61,62). Applying these games in cooperative learning can make the gaming process a tool for engagement, initial diagnosis, reflective discussion, skills acquisitions to relate to peers in difficult situations where students are lured to engage in deviant behaviours (22).

Here a DPYD game is designed to enhance motivation and engagement in positive youth development. Whether or not it has a positive impact on the learning outcomes is of prime concern. Empirical evidence supports that playing serious educational games (SEGs) facilitates users to learn the content and boost knowledge acquisition (63). Cheng and associates’ study results are informative to science educators, game designers, instructional designers, and SEG

advocates. The results offer empirical evidence that SEGs allow students to understand the confusing and difficult concepts of the human immune system in an easier way (57).

Even though some evidence supports the use of SEGs, there is still substantial controversy about the actual effectiveness (64). SEGs help students gain procedural knowledge and facilitate a higher-level cognitive process (57). They allow students to gain positive learning experiences which are useful, clear, attractive, interesting, and satisfying (57,64). Many scholars still believed that playfulness was negatively associated with the learning outcomes of users. Playfulness of SEGs can be a double-edged sword since excessive playfulness may generate some issues which instructors have to consider when using SEGs in facilitating student science's learning (57). On the other hand, many scholars maintained that playfulness is one of the major attraction in motivating adolescents' participation (64-66) especially in serious issues such as morality in computer game learning.

Implications for practice and/or policy

As in many emerging methodologies in social science programs, many practical problems come up before answers can be provided. There is much to be discussed not just in the fun versus learning dichotomy. Experienced practitioners often think about how much games will contribute to intervention. Here comes the contention of active versus the laid-back style of game program facilitation. It is not appropriate to provide direct answers in the process of cooperative learning while a more carefree learning atmosphere might as well not be desirable for evaluating what the participants have learnt in the process. Here we stand in the crossroad of pushing for a result or allowing participants to contemplate. In experiential learning, a concrete experience gained through the participation in a game can be used and tested in new scenarios, to verify and to apply in daily life (66). Substantial follow up and facilitations by experienced practitioners are essential. Here comes the challenge of limited resources vs. the intensity of learning and growth. The most challenging situation is how to allow for the maturity of discussion in important value clarification issues such as cheating/lying, integrity, freedom, and liberty to help learners be better able to comprehend the desired educational targets while the facilitators might need to advocate for certain morality direction from the funders and donors.

The above discussions have implications on practice and policy to be implemented in serious game learning. The know-how of game program design should address the issue of balance fun to attract with the seriousness of the contents. For example, how to engage adolescents with the free spirit of discussion in a scenario of integrity is a matter of program design and process facilitation.

The multi-level of value self-examination of funders, designers, and practitioners are quintessential, as the serious computer game might have generated moral discussion and reflection to question the above stakeholders' position before adolescents come to re-examine theirs. If life integrity issue should go beyond cognition to practice, the application issue of game learning reserves more resources and energy to handle with. The second part of the evaluation of effectiveness should be focused on the impact of learning on daily life. This helps to answer the prime concern of the effectiveness of DPYD, not only for investigating the results but also for its impact on the life-changing capacity for participants.

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Club Charities Trust. Readers may request free copies for non-commercial purposes of these games by contacting Dr. T Y Lee at ty.lee@cityu.edu.hk or ty.lee@friends.cityu.edu.hk after July 1, 2020.

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