

Time-Invariant Framework of Information Ethics Education

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Abstract: Information education is actively carried out in the world because of the rapid development of information environment. The information education in schools contains the contents of human communication, morals and ethics. The information morals and ethics education contains current case studies varying as time. Therefore, the information education with unchanged thinking is necessitated. In this report, we construct a framework of information ethics education based on the directions of human action and mind.

Keywords: Information education, Information morals, Information ethics, Framework, Time-invariant

Introduction

We usually exchange information by communication each other. The excessive communication causes some problems of slander, fraud and others [1]. Such problems are recently treated in school education [2]. We analyze textbooks of information in senior high schools [3], and we evaluate the direction of human action on the textbooks. Information morals education contains morals related current evidences. The evidences are varying as time, so we treat not the time-variant evidences but the time-invariant concept in this study. Further, we construct a new framework of information ethics education based on the directions of human action and mind.

1. Direction of human action and mind

We had already analyzed the textbooks of information in Japan by extracting the evidences related to information morals [3]. The evidences are varying as time. We will not be able to utilize the time-varying evidences in future. So, the time-invariant upper concept is necessitated. In order to construct a fundamental idea of information ethics framework, we invest the direction of morals and ethics.

The morals and ethics are related to human action and mind, respectively. We interpret the information morals from the view point of human action. Five directions of human action are obtained as an interpretation of information morals, i.e., (a) Autonomy, (b) Respect, (c) Allowance, (d) Collaboration and (e) Defense. We evaluate the information ethics from the view point of human mind. Four directions of human mind are obtained as an interpretation of information ethics, i.e., (1) Regard, (2) Affection, (3) Consideration, and (4) Understanding. The results are depicted in Figs. 1 and 2.

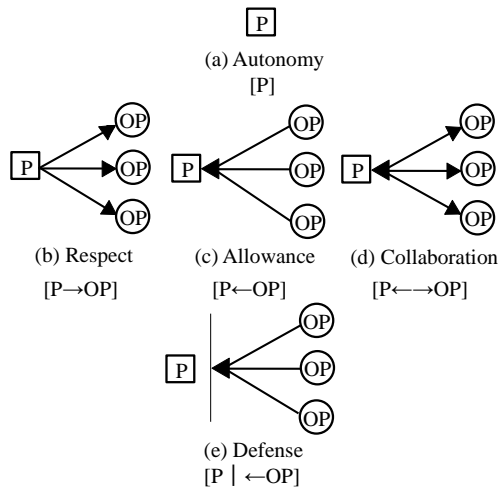


Fig1. Interpretation of the information morals based on human action

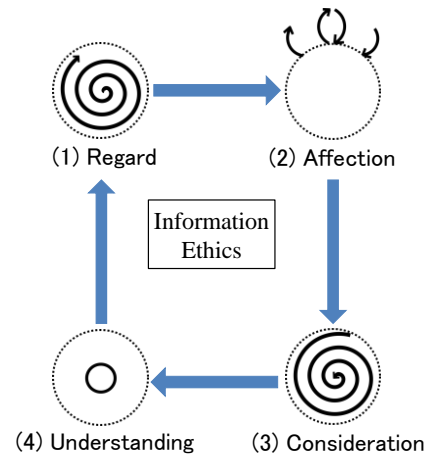


Fig2. Interpretation of information ethics based on human mind

2. Framework of information ethics education

We can extend the previous results of the directions of information morals and ethics to the framework of information ethics education. The derived framework of information ethics education is shown in Fig. 3, where the column means the direction of human action and the row means the direction of human mind. The framework can be utilized in preparation of school classes.

Direction of mind \ Direction of action	(a) Autonomy	(b) Respect	(c) Allowance	(d) Collaboration	(e) Defense
(1) Regard					
(2) Affection					
(3) Consideration					
(4) Understanding					

Fig. 3 A framework of information ethics education

We verify the utilization of the proposed framework by analyzing the components of widely used web contents. The treated contents consist of twelve components. We extract directions of human action and mind from each component. We apply the derived direction of human action to the corresponding column of the framework and the derived direction of human mind to the corresponding row of the framework. We set the component on the cross point of the selected column and row. We repeat this procedure. We select the components of Web contents in the order from upper left to lower right. We can verify the validity of framework of information ethics education because the resultant order of components is similar to the original order.

The setting method of arrows is as follows: The method contains two loops. The inner loop means the procedure along the direction of human action. The outer loop means the procedure along the direction of human mind. The general algorithm is shown below.

Loop (Procedure in row order) {

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Loop (Procedure in column order) { }
}

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The inner loop of the general algorithm is carried out by the following rule. First, the left and right sides are set on the first column, and right side is shifted to the right one by one. In the range, the left side is shifted one by one to the right side. Further, the used order of components is determined by bit-reversal order of inner column elements of the range. The detailed algorithm of the inner loop is shown below.

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Loop (Set the left and right sides on the first column. Increment the right side.) {
  Loop (Fix the right side. And shift the left side one by one to the right.) {
    The used order of components is determined by bit-reversal order of inner
    column elements of the range.
  }
}

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The detailed algorithm of the outer loop is similar to the algorithm of the inner loop. We treat the CEC's Web contents as widely used contents. The contents consist of twelve components. The depicted dotted circles are derived by extracting from the each component along to the idea of human action and mind. The obtained arrows go from the upper left to the lower right. The resultant flow of the components is depicted in fig. 4. This direction means the desired direction of the time-invariant information ethics education.

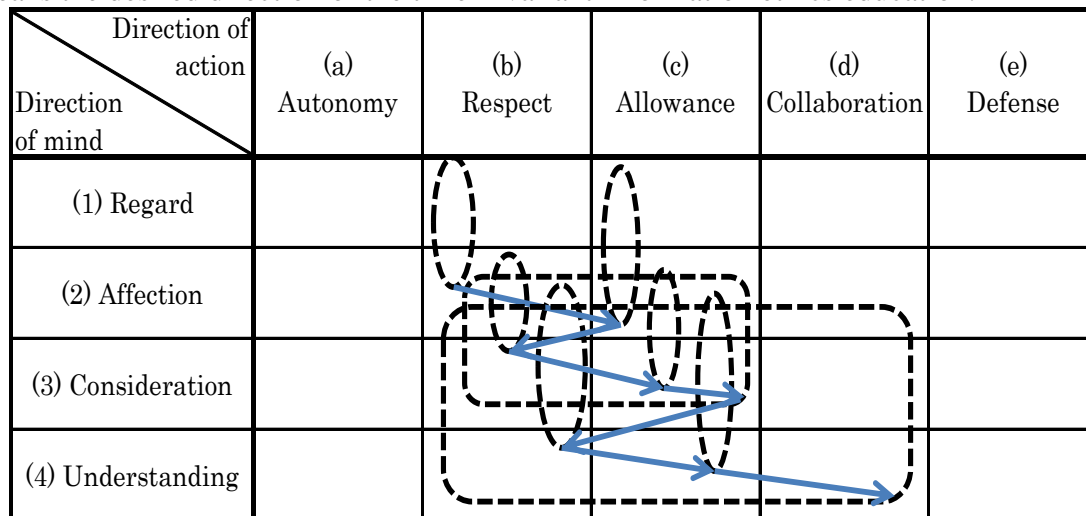


Fig. 4 Verification of the proposed framework

Conclusion

We construct the framework of information ethics education based on the directions of human action and mind, which means the time-invariant information ethics education.

References

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