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The Effectiveness of Training in Reducing Email Defects

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Abstract

Previous research has shown that there are many defects associated with email use within the workplace. This paper describes the effectiveness of email training in enabling employees to write better emails. Employees were asked to evaluate the emails they received from specified senders before and after the senders had received training. These emails were marked against a set of ten criteria that covered different aspects of email, including whether the email had a suitable subject line, whether it was relevant and if it was easy to read. By comparing the results before and after the training it is possible to see how effective the training has been and which areas of email use benefited the most from the training. The results show that some of the email defects are more receptive to training than others. The data also shows the relationships between the evaluation criteria used. This is important because it shows how some of the problems with email are related; similarly it shows how an improvement in one area is likely to lead to an improvement in another. This paper highlights some of the problem areas often associated with email and shows the effect of training in reducing these email defects.

Introduction

Email is a communications tool that is cheap, fast and can be used to send the same message to various people at once (Robbins & Coulter, 1999). The sharing of information between colleges is easy, regardless of whether they are in the next office or a different time zone (Hein, 1996). The growth in email use has been so rapid that it is now estimated that an email message needs only to be forwarded between five and seven times to reach any other email user in the world (BBC News, 2003).

Despite the benefits of email, its continuing growth has caused some users to become overwhelmed by the volume of emails they receive. Many email users, especially managers receive too many email messages to read in the time available to them (Balter and Sidner, 2002). This can lead to tasks not being carried out and deadlines being missed. It is not only the quantity of email that can cause concern within the workplace, but also the quality of the email. Poorly written or ambiguous emails can lead to misunderstandings that can cause tension within the workplace and may lead to incorrect instructions being carried out (Frazee, 1996). These problems associated with email maybe due to the sender not understanding the context into which their messages are being received (Kimble and Abu Bakar, 2001). The weak social cues in

electronic communication such as email do not provide sufficient context for senders to regulate their behaviour properly (Kimble, Hildreth and Grimshaw, 1998).

The majority of employees are not taught how to become effective users of email (Nantz & Drexel, 1995). This may be because such skills are taken for granted. Email education within organisations tends to focus on the hardware and software issues without regard for the requisite communication skills (Nantz & Drexel, 1995). Even the most educated of employees can lack the basic skills for expressing themselves effectively (Davenport, 1997). This paper reports on the effectiveness of training in enabling employees to write better emails. It shows which of the problem areas associated with email use are most receptive to training and which areas showed the least improvement.

Methodology

Selection of Subjects

A study at a large UK Plc was conducted with the aim of creating an overall representation of the current state of email communication within the company and to reduce the defects associated with email use. The results from the initial study highlighted the problems associated with email use, and the second phase was to evaluate the effectiveness of training in reducing these problems.

The employees that were selected for this experiment were high volume senders that were identified through Lotus Notes billing data. These employees were selected because of the high number of emails they send. The experiment involved the high volume senders having some of their email marked before and after they had received training. There were 11 senders that participated in the experiment, each having between 1 and 3 recipients that would mark the emails they received. There were 20 recipients in total making up 20 sender / recipient pairs. The senders were made aware that they were going to be monitored over the period, although they did not know who would be evaluating their emails. The employees that had taken part in the experiment were not limited to one department or location. Subjects were located anywhere within the UK, as the training for some subjects was done remotely using teleconference facilities.

Evaluation Criteria

The recipients were asked to mark up to 20 emails that they received from the sender before and after the sender had received training. The recipients were asked to evaluate these emails against a set of criteria which were as follows:

- The message would have been better suited to a telephone call, or another medium.
- The email is easy to read
- The email is straight to the point

- The email is totally irrelevant to me
- If it is an actionable email it tells me what is expected from me
- If it is an actionable email it tells me when action is required
- The subject line contains sufficient detail for me to assess the importance of the email
- The subject line contains sufficient detail for me to know what the message is about
- Approximately how long did it take you to read and understand this email?

The evaluation criteria were based on the findings from previous research by the authors (Burgess et al, 2003). The recipients marked the emails against each of the criterion using a value from a 5-point number scale according to the quality of the email. A value of 1 represented the positive side of the scale and shows that the email completely meets the criterion. A value of 5 indicates that the email did not meet the criterion and that the email is poor in that respect. If the recipients were marking an email that had been forwarded to them, they would only mark the first part of the message and how well it related to the rest of the message. The first part of a forwarded email usually contains a message from the person forwarding the email, with the rest of the message following underneath. The recipients were given an additional sheet that gave an explanation of the rating scale that would be used to mark each email. This gave a meaning to each of the extremes on the scale for each of the criteria. This was important because otherwise the direction of the scale may appear be unclear and inconsistent.

Training on the Best Practice of Email Use

The training on the best practice of email use for both the sender and recipient groups was undertaken on separate days, although the material covered in the training was similar in both sessions.

The recipients training focused mainly on the assessment criteria. Recipients were given guidance as to how to complete the criteria sheet, and an explanation of the scale that would be used to mark each of the criteria.

The sender training went into more detail to explain the email defects. This was also more interactive than the recipient training as the senders were shown examples of poor emails and were asked to pick out the defects, whereas the recipients were simply told where the defects were. The senders were given training on how to better manage their email by the use of folders and archiving. The senders were shown the criteria sheet so that they knew how they would be marked. The training for the senders was more comprehensive than that of the recipients because it was the senders that were being marked, whereas the recipients just needed to be aware of the email defects and be able to complete the evaluation sheet.

The Effect of Training

From the data obtained from the experiment it was possible to determine which aspects of effective email use are most receptive to training. The data shows areas where there has been little or no improvement in the quality of email. The t-test statistic was used to determine if the training had a significant impact on each of the criterion. Correlation analysis was carried out on each of the evaluation criterion to determine if there was any relationship between one criterion and another.

Before the data could be analysed it was standardised so that statistical methods could be used. For each of the 20 sender and recipient pairs only two values were needed for each of the criterion evaluated, one value before and one value for after the sender had received training. This was necessary because in many sender & recipient pairs the number of emails evaluated before training was different to the number evaluated after training. The mean values were taken before and after training for each of the 20 pairs. The difference between the before and after values shows the impact of the training for each pair and for each of the criterion. A negative value indicates an improvement and a positive value indicates that the training has not improved the sender's ability to write effective emails. The effect of the training was then calculated for all 20 pairs, the average of these 20 values was then calculated to show the overall effect of training for each of the criteria evaluated, which is shown in Table 1.

Criteria	Before Training	After Training	Difference
The message would have been better suited to a telephone call, or another medium.	1.49	1.40	-0.10
The email is easy to read	1.63	1.39	-0.24
The email is straight to the point	1.58	1.36	-0.22
The email is totally irrelevant to me	1.69	1.50	-0.19
If it is an actionable email:			
It tells me what is expected of me	1.80	1.73	-0.13
It states when action is required	2.61	2.12	-0.48
The subject line contains sufficient detail for:			
Me to assess the importance of the email	2.89	2.19	-0.70
Me to know what the message is about	2.17	1.49	-0.65
Approx how long did it take to read and understand this message? (Minutes)	76.21	65.67	-10.54

Table 1: The overall mean effect of training on how emails are evaluated

Table 1 shows that there has been an improvement in the quality of emails received by the recipients in this experiment as a result of email training for the senders. The numbers shown in Table 1 indicate the extent of the shift along the 5-point scale as a result of the training, except for the last criterion in the table that is in minutes. It is inappropriate to apply percentage changes to indicate the success of the training because percentages can exaggerate the real change depending on where on the scale the change occurs. For example a change from 5 to 4 and 2 to 1 both show a change of 1, but show percentage changes of 20% and 50% respectively.

The Significance of the Training

To determine the significance of the effect of training the t-test statistic was calculated for each of the criterion that the emails were marked against. The t-test assesses whether the means of two groups are statistically different from each other. For each criterion the before and after values of the 20 sender and recipient pairs were used. The t-test statistic for each of the criterion can be seen in Table 2. The values in Table 2 are based on a paired two tailed t-test. Where the t value ≤ 0.05 it can be said with 95% confidence that training yields an improvement for that particular criterion. Similarly where the t value is ≤ 0.01 it can be said with 99% confidence that training yields an improvement for that particular criterion.

Criteria	t-test value
The message would have been better suited to a telephone call, or another medium.	0.438
The email is easy to read	0.022
The email is straight to the point	0.023
The email is totally irrelevant to me	0.138
*If it is an actionable email:	
It tells me what is expected of me	0.623
It states when action is required	0.320
The subject line contains sufficient detail for:	
Me to assess the importance of the email	0.003
Me to know what the message is about	0.005
Approx how long did it take to read and understand this message?	0.285

Table 2: t-test statistic comparing the difference between before and after training for each criterion.

The t-test values in Table 2 show that the training has been significantly successful at the 95% level at improving an employee's ability to write emails that are easy to read and that are straight to the point. This means that in 95% of cases it would be expected that email training would improve an employee's ability to write clearer emails. The values in Table 2 also show that the training has been significant at the 99% level at improving the way that an employee uses the subject line to convey information about the content and the urgency of an email.

The Relationships between Criteria

Some of the criteria by which the emails were marked are related. For instance it was found that if an email was straight to the point then it was also likely to be easy to read. The strength of the relationship between the different evaluation criteria was calculated using Pearson's correlation coefficient (r). Pearson's correlation coefficient was used to see if there was any significance in the relationships between how the recipients marked the emails against one criterion compared to another criterion. This was done for emails evaluated before and after the senders had received training.

This analysis does not show if there has been any improvement in any of the criteria, it only shows if there is a relationship between how two of the criteria were marked.

A significant correlation would show that one criterion is marked in the same way as another, but it will not show if the training has led to an improvement or not.

The r-value ranges between -1 and 1. The closer the r-value is to 1 the stronger the correlation. The significant r-value at the 95% confidence level for a 2-tailed test with 18 degrees of freedom is 0.444. The degrees of freedom is calculated by taking the number of pairs used and subtracting 2. Since there were 20 sender / recipient pairs the number of degrees of freedom is 18. When the calculated r-value is greater than 0.444 then it can be said with 95% confidence that correlation exists between the way that the two criteria are evaluated. The r-value for 99% confidence for this set of data is 0.561.

It was found that there was positive correlation at the 95% level for the relationships, shown in Table 3, both before and after the senders had received training.

Significant Relationships Between Criteria	Before Training (r)	After Training (r)
The message would have been better suited to a telephone call, or another medium AND the email is easy to read	0.646	0.533
The message would have been better suited to a telephone call, or another medium AND the email is straight to the point	0.72	0.61
The email is easy to read AND the email is straight to the point	0.788	0.7
The email is straight to the point AND the email is totally irrelevant to me	0.597	0.664
If it is an actionable email it tells me what is expected AND by when action is expected by	0.473	0.504
The subject line contains enough information for me to be able to access the importance of the message AND for me to know what the message is about	0.815	0.492

Table 3: Significant relationships (95%+) between criteria both before and after training

The relationships shown in Table 3 are significant both before and after the senders had received training. Other relationships were identified where the relationship between two criteria was significant before training was given but not significant after training had been given. Similarly some relationships between criteria were found only to be significant when evaluating emails after the senders had received training. These changes are due to the fact that the training had a greater impact on some of the evaluation criteria compared to others, thus influencing the relationships between some of the criteria.

The data in Table 3 shows that there is a relationship between whether an email is easy to read, whether it is to the point and whether email was the most appropriate medium to use. This can be seen from the first three rows of Table 3. It can be said with 99% confidence that there is a correlation between an email being easy to read and being to the point, given that 0.72 and .061 are both greater than r-value of 0.561. The data shows that messages that would have been better suited to another form of communication are likely to be difficult to read and not to the point. The values do not

give an indication of the success of the training, just the relationship between the two criteria. An email that is easy to read is likely to be straight to the point; similarly an email that is difficult to read is likely not to be to the point.

The criteria that are associated with actionable emails are related. If an actionable email states what action is required then is likely that the email will also state by when the action is required. Similarly the criteria associated with the use of the subject line are related. If a recipient is able to access the importance of an email from the subject line they are also likely to know what the message is about.

Conclusions

The results show that training has improved the way that employees write emails. This can be seen in Table 1 as the values for each criterion show a shift to the left on the 5-point scale by which senders were marked. The values in Table 1 indicate the overall effect of the training taking account the results from all 20 pairs of senders and recipient before and after training.

The results of t-test analysis on the effects of training show that there are significant improvements in the clarity of written email in terms of whether the email was straight to the point and if it was easy to read. The level of significance for these two tests is 95%, meaning that in 95% of cases it would result in emails that are easier to read and more to the point. It can be said with 99% confidence that training will enable email senders to write better subject lines that allow the recipient of the email to know what the message is about and understand the importance of the message. The t-test analysis shows that 4 out of the 9 criteria showed significant improvements after the senders had received training. The other criteria show overall improvements that are not statistically significant. This was because some of the individuals did not show improvements across some of the criteria, although there was an overall improvement when all individual senders are taken into account.

Correlation analysis has shown that there is a statistically significant relationship between how some of the criteria were evaluated. For instance there is a statistically significant correlation between whether an email was marked easy to read and whether it was marked as being to the point or not. It is useful to know how the evaluation criteria are related because it shows how an improvement in one area can lead to an improvement in another. Similarly it shows how a defect in one area can lead to a defect in another.

Before looking at the effect of the training it is useful to look at how senders were marked before they received training. Table 1 shows the average mark before and after training had been given for each of the criteria. The values in the before column indicate the areas that require training and the areas the recipients are already satisfied with. Table 1 suggests that the recipients are more satisfied with the senders' ability to choose the most appropriate medium for the message, than the senders' use of the subject line or the clarity of actionable emails.

The results show that as a result of training it takes less time to read and understand email messages, meaning employees can spend more time on other aspects of their

work. If employees are to be more effective users of email, both on the sender and recipient side it suggests that employee productivity will increase. Training will also enable employees to better manage and prioritise their email, through an improvement in the clarity of their actionable emails and improved use of the subject line.

Although the training has been an overall success, the senders participated in the second part of this experiment within a week of receiving the training whilst it was fresh in their minds. The senders were also aware that some of their written emails were to be analysed as part of the experiment. The authors plan to follow up this experiment in the future. The same group of senders would have some of their emails evaluated by the same recipients but the senders would not have any additional training or be aware that they were being monitored. The purpose of this would be to see if the senders still retain what they learned from the training and if they will continue to use email in the same way.

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